



1641
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
(MBHB Case No. 00-1123-D)

In re Application of:

Cunningham *et al.*

Serial No.: 09/930,352

Filed: August 15, 2001

For: A Label-Free High-Throughput Optical
Technique for Detecting Biomolecular
Interactions

Group Art Unit: 1641

Examiner: Yang, Nelson C.

Conf. No. 3472

TRANSMITTAL LETTER

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313

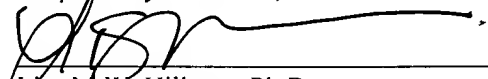
Dear Sir:

In regard to the above identified application,

1. We are transmitting herewith the attached:
 - a) Petition to the Director Under §1.181;
 - b) Exhibits A to E;
 - c) Return postcard
2. With respect to fees:
 - a) It is believed no fee is due at this time.
 - b) Please charge any underpayment or credit any overpayment our Deposit Account, No. 13-2490.
3. GENERAL AUTHORIZATION: Please charge any additional fees or credit overpayment to Deposit Account No. 13-2490. A duplicate copy of this sheet is enclosed.
4. CERTIFICATE OF MAILING UNDER 37 CFR § 1.8: The undersigned hereby certifies that this Transmittal Letter and the paper, as described in paragraph 1, are being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313 on February 6, 2006.

Date: February 6, 2006

Respectfully submitted,



Lisa M.W. Hillman, Ph.D
Registration No. 43,673



PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
(Case No. 00-1123-D)**

In application of:

Cunningham et al.

Serial No.: 09/930,352

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**For: A Label-Free High-Throughput Optical
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Examiner: Yang

Group Art Unit: 1641

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PETITION TO THE DIRECTOR UNDER §1.181

Dear Sir:

A notice of abandonment was mailed in the above-mentioned application on January 30, 2006. The notice asserts that no response to the Office's letter of October 17, 2005 was received by the Office. The letter of October 17, 2005 was a request for corrected drawings, which set a two month period for response. On November 23, 2005, the Applicants submitted 29 sheets of corrected drawings under the provisions of 37 CFR §1.8.

Attached as Exhibit A is a copy of the transmittal form for the corrected drawings (listing 29 drawings), which has the necessary certification under 37 CFR §1.8. Attached as Exhibit B is a copy of the Response to Notice Regarding Drawings, which was mailed on November 23, 2005 with the above-mentioned transmittal form. Attached as Exhibit C are copies of the 29 sheets of corrected drawings, which were mailed on November 23, 2005 along with the above-mentioned papers. (The statement "Replacement Sheet" has been added in the upper margin of these drawings.) Attached as Exhibit D is a copy of the post card, which was mailed on November 23, 2005 with the above-mentioned papers. The Office stamped the postcard as received and returned the postcard to us. See Exhibit E.

The undersigned signed the certificate of transmission under 37 CFR §1.8 for the corrected drawings (See Exhibit A). The undersigned has personal knowledge that 29 sheets of corrected drawings (including a transmittal form, a Response to Notice Regarding Drawings, and a postcard) were mailed to the USPTO via first class mail on November 23, 2005.

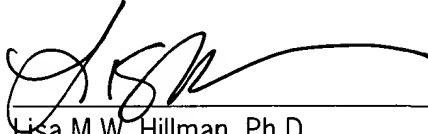
Applicants respectfully request withdrawal of the holding of abandonment of the above-mentioned application and entry of the corrected 29 sheets of drawings attached hereto in Appendix

C. Applicants furthermore request that the application be passed to issuance in a timely manner.
Please contact the undersigned with any questions.

Respectfully submitted,

Date: February 6, 2006

By:



Lisa M.W. Hillman, Ph.D
Registration No. 43,673



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
(MBHB Case No. 00-1123-D)

In re Application of:

Cunningham *et al.*

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For: A Label-Free High-Throughput Optical
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TRANSMITTAL LETTER

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313

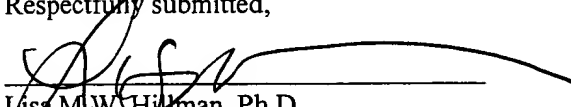
Dear Sir:

In regard to the above identified application,

1. We are transmitting herewith the attached:
 - a) Response to Notice Regarding Drawings;
 - b) 29 sheets of drawings
 - c) Return postcard
2. With respect to fees:
 - a) It is believed no fee is due at this time.
 - b) Please charge any underpayment or credit any overpayment our Deposit Account, No. 13-2490.
3. GENERAL AUTHORIZATION: Please charge any additional fees or credit overpayment to Deposit Account No. 13-2490. A duplicate copy of this sheet is enclosed.
4. CERTIFICATE OF MAILING UNDER 37 CFR § 1.8: The undersigned hereby certifies that this Transmittal Letter and the paper, as described in paragraph 1, are being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313 on November 23, 2005.

Respectfully submitted,

Date: November 23, 2005



Lisa M.W. Hillman, Ph.D
Registration No. 43,673

Hon. Commissioner of S/N 09/930,352 Atty LMWH
Patents and Trademarks
Re: Applicant - Cunningham Case No. 00-1123-D

Label-Free High-Throughput Optical Technique For Detecting
Biomolecular Interactions

Sir: Please place the Patent Office receipt stamp hereon and mail to acknowledge receipt of:

- ☒ Transmittal Letter
☒ Other Notice Regarding Drawings

Fee Enclosed

\$ -0-
November 23, 2005

Respectfully,
McDonnell Boehnen Hulbert & Berghoff
Attorney for Applicant

Hon. Commissioner of
Patents and Trademarks
S/N 09/930,352 Atty LAMWH
Re: Applicant's Cunningham Case No. 00-1 23-D
NOV 29
2885 Free High-Throughput Optical Technique For Detecting
Biomolecular Interactions

Sir: Please place the Patent Office receipt stamp hereon and mail to acknowledge receipt of:

- ☒ Transmittal Letter
- ☒ Other Notice Regarding

Fee Enclosed

\$ -0-
November 23, 2005



Respectfully,
McDonnell Boehnen Hulbert & Berghoff
Attorney for Applicant

FIG. 1A

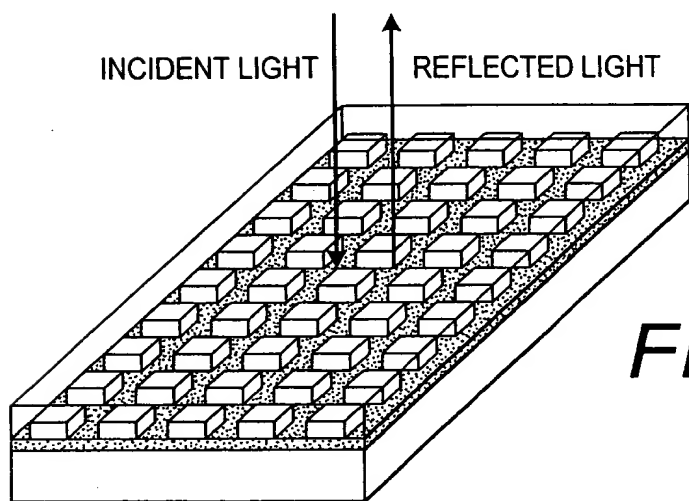
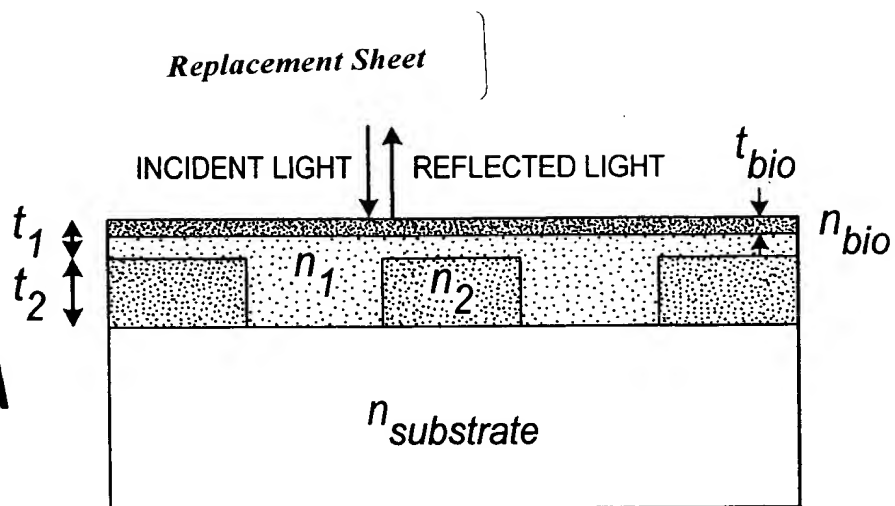


FIG. 1B

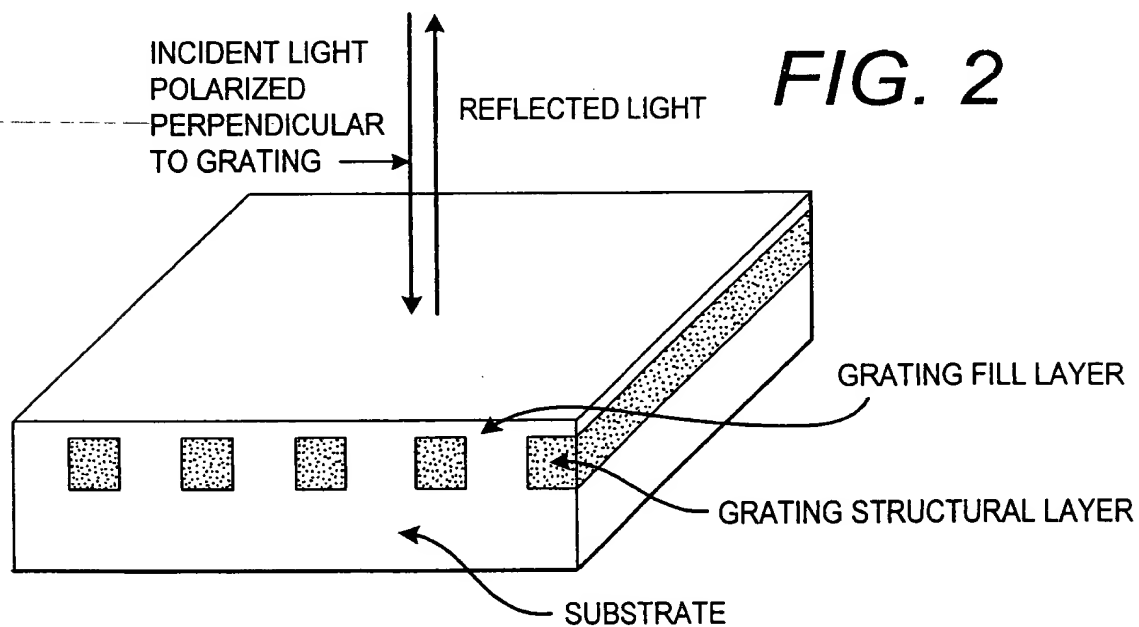


FIG. 2

FIG. 3A

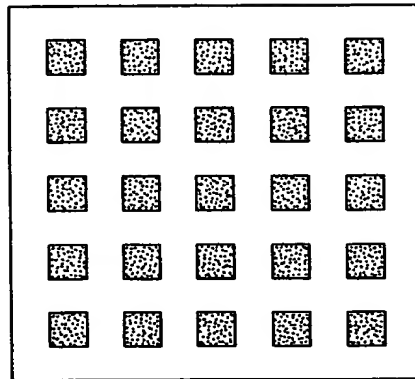


FIG. 3B

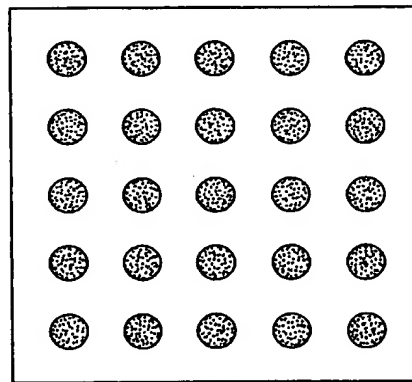


FIG. 4

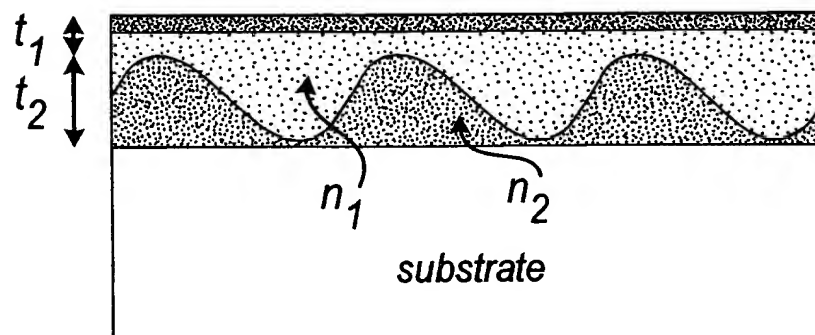


FIG. 5

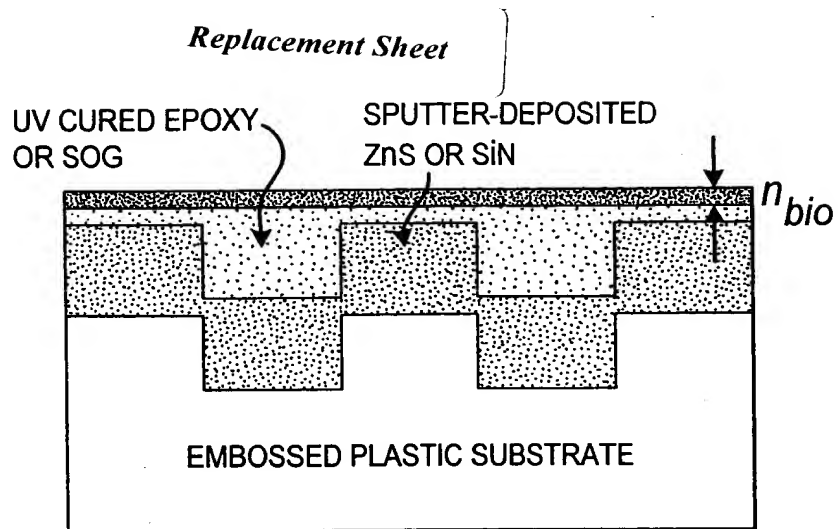


FIG. 6

- | | | |
|----------|---|---|
| Amine | { | <ul style="list-style-type: none"> ➤ Sulfo-succinimidyl-6-(biotinamido)hexanoate (Sulfo-NHS-LC-Biotin) <ul style="list-style-type: none"> • Streptavidin / avidin then biotinylated molecule ➤ N,N'-disuccinimidyl carbonate (DSC); • - NH₂, non-cleavable ➤ Dimethyl pimelimidate (DMP); • - NH₂, non-cleavable ➤ Dimethyl 3,3'-dithiobispropionimidate (DTBP); • - NH₂, cleavable ➤ 1-Ethyl-3-(3-Dimethylaminopropyl)carbodiimide Hydrochloride (EDC) and n-Hydroxysulfosuccinimide (Sulfo-NHS); • - COOH ➤ Sulfo-succinimidyl 6-[α-methyl-α-(2-pyridyl-dithio)toluamido] hexanoate (Sulfo-LC-SMPT); • - SH, cleavable ➤ N-(B-Maleimidopropoxy)succinimide ester (BMPS) <ul style="list-style-type: none"> • - SH₂, non-cleavable ➤ Sulfo-succinimidyl 4-[N-maleimidomethyl]cyclohexane-1-carboxylate (Sulfo-SMCC); • - SH, non-cleavable |
| Aldehyde | ➤ | <p>Directly with aldehyde of first amino the aldehyde</p> <ul style="list-style-type: none"> • - NH₂ |
| Ni(II) | ➤ | <p>Using Nitrilotriacetic acid (NTA) group, which forms a chelate with Ni(II)</p> <ul style="list-style-type: none"> • His-tagged molecules |

FIG. 7C

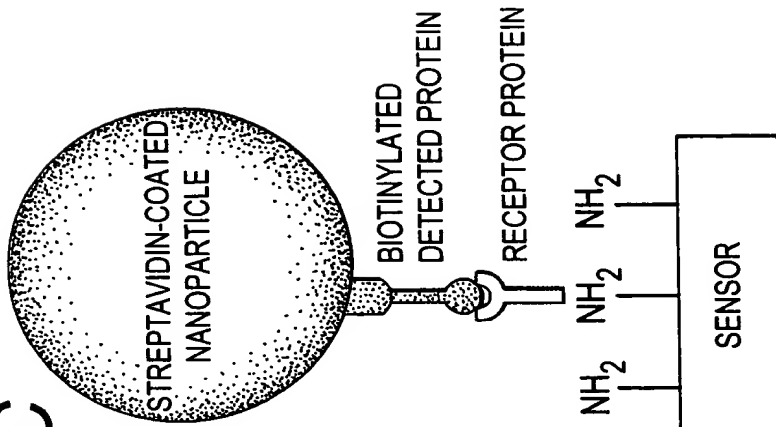


FIG. 7B

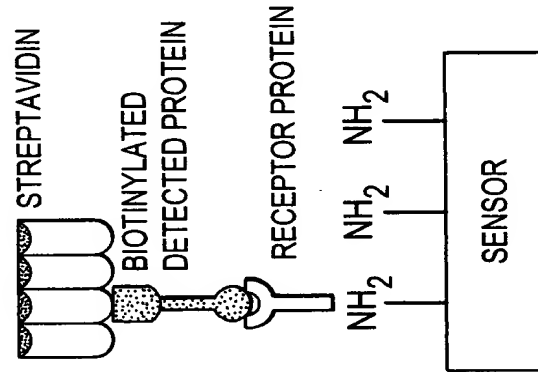


FIG. 7A

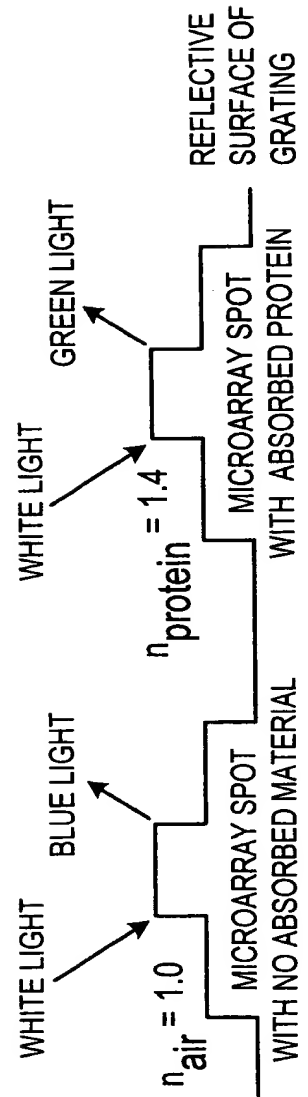
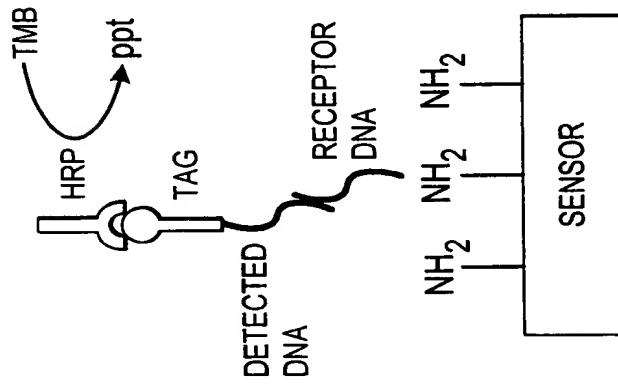


FIG. 8

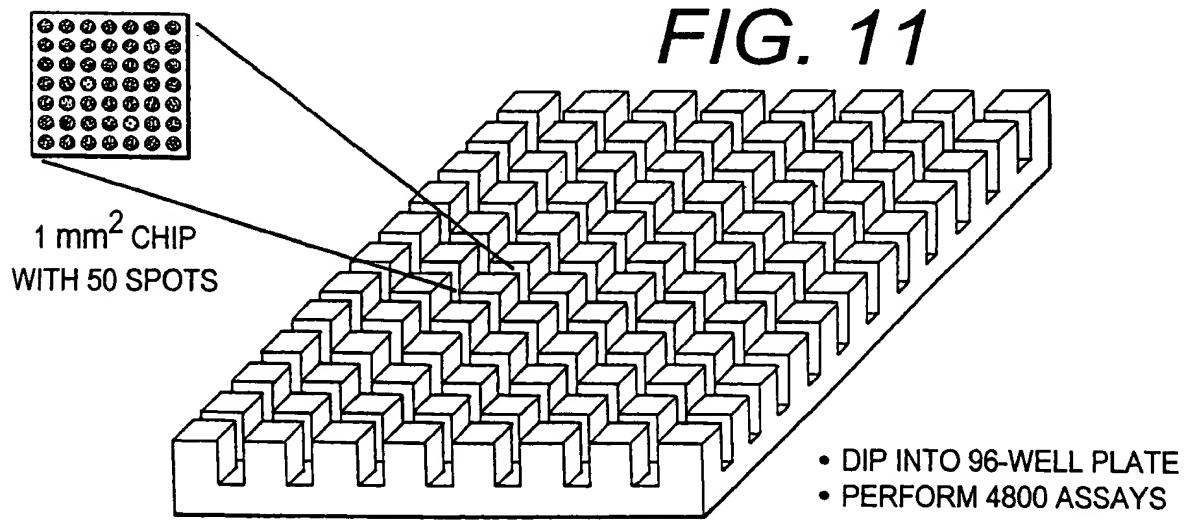
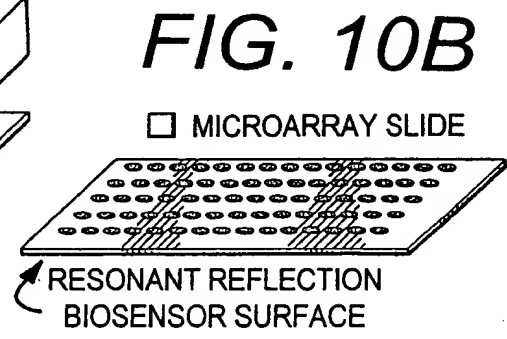
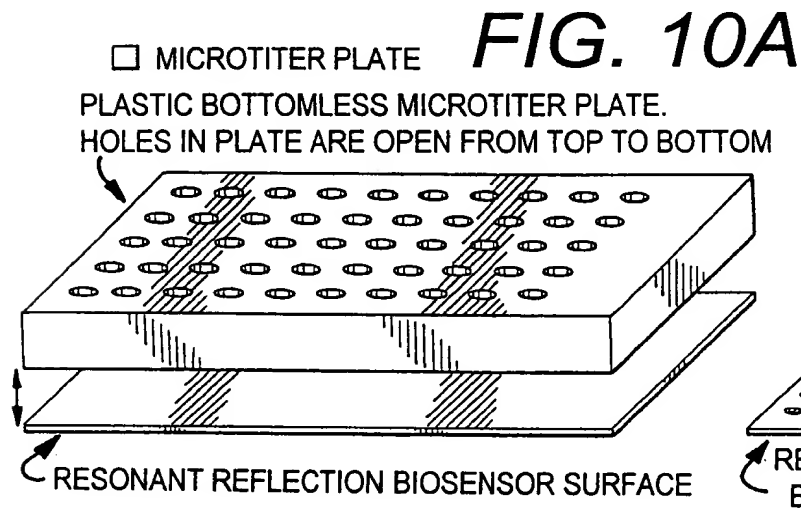
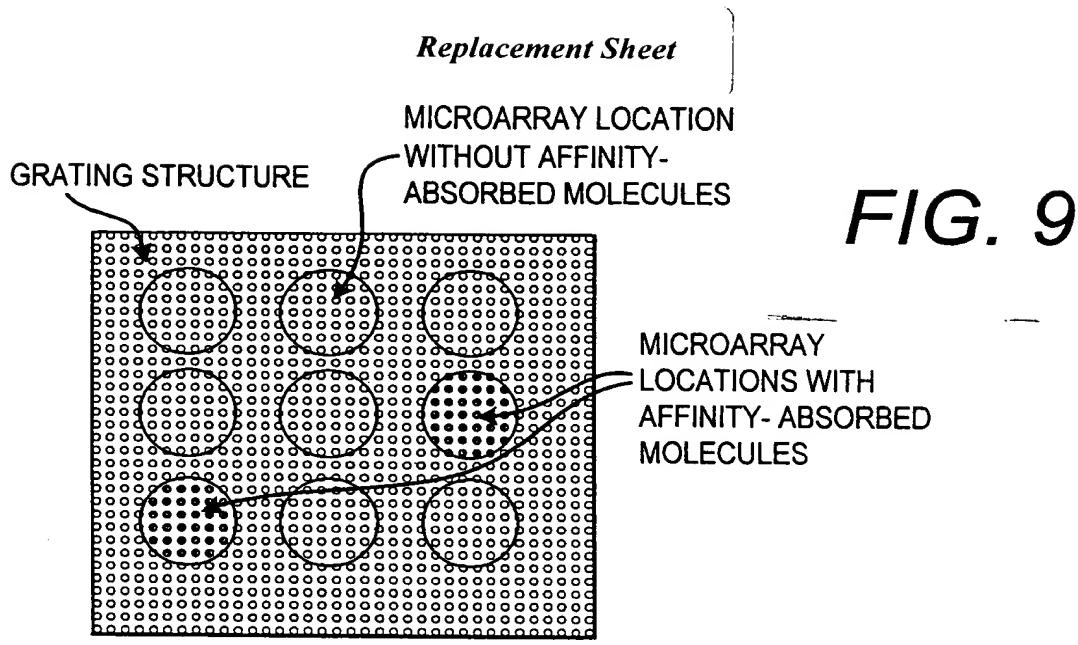


FIG. 12

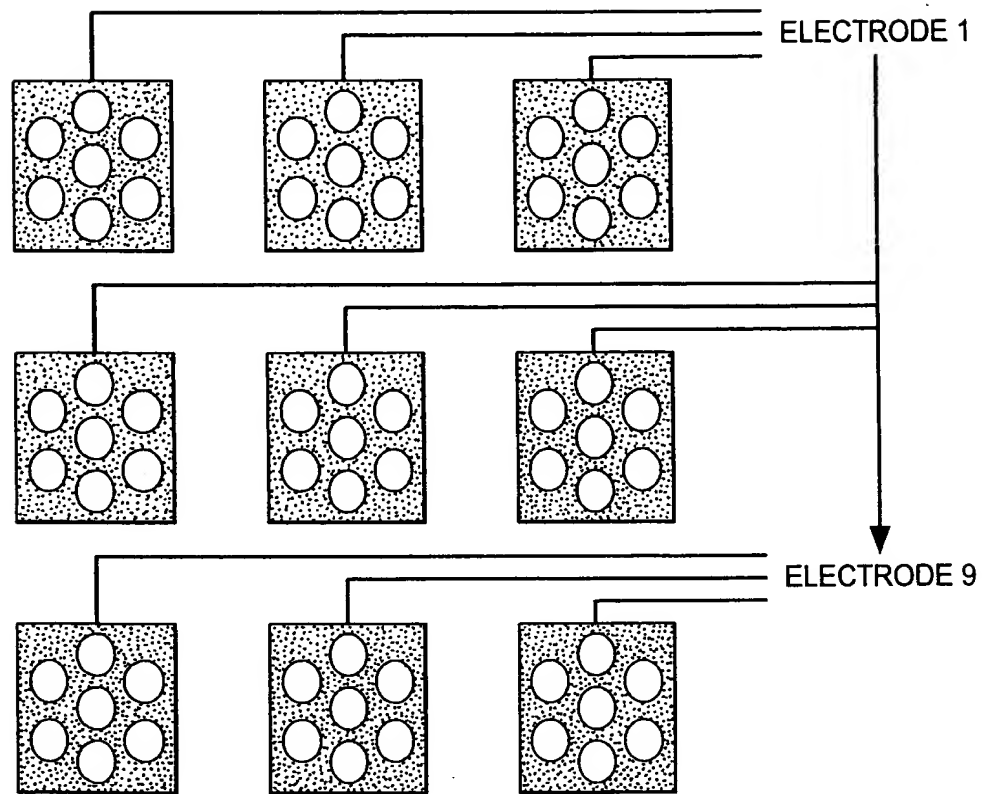
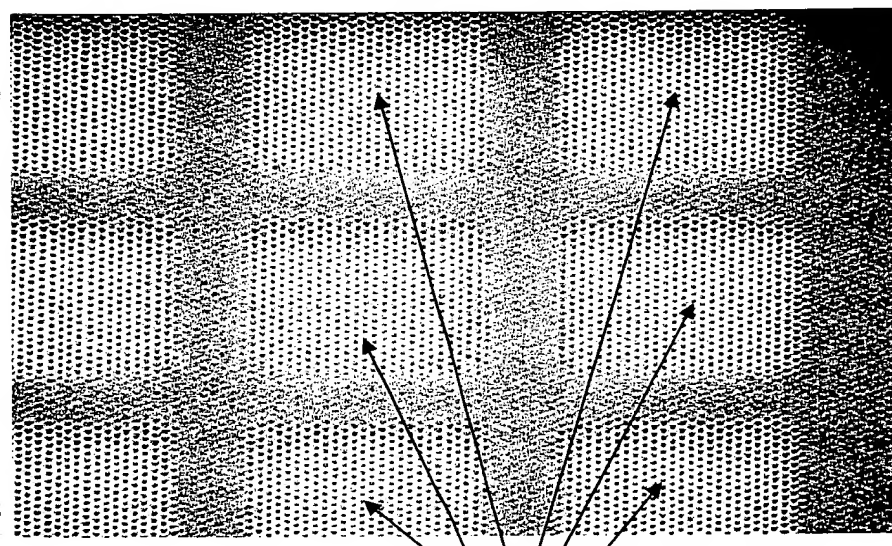


FIG. 13



SEPARATE ELECTRODE GRATING REGIONS

FIG. 14

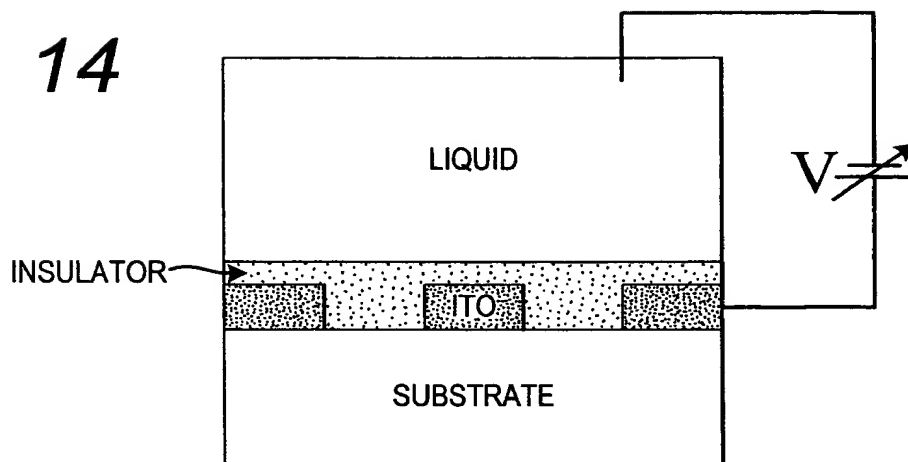


FIG. 15

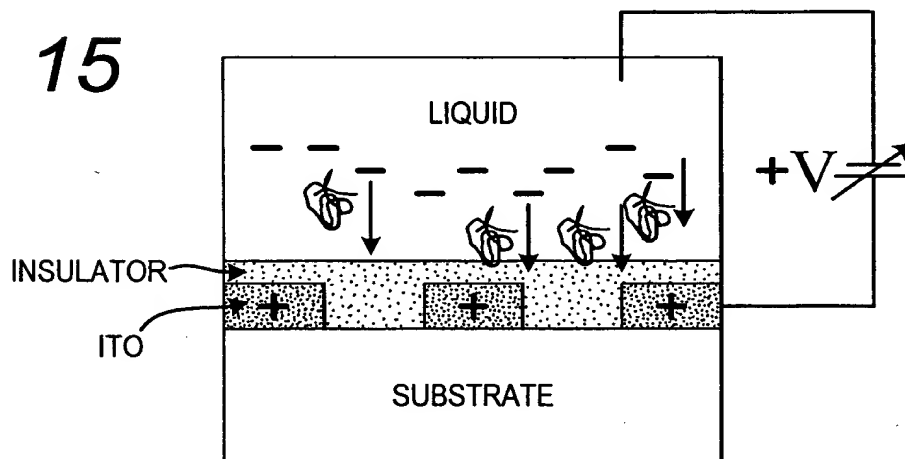


FIG. 16

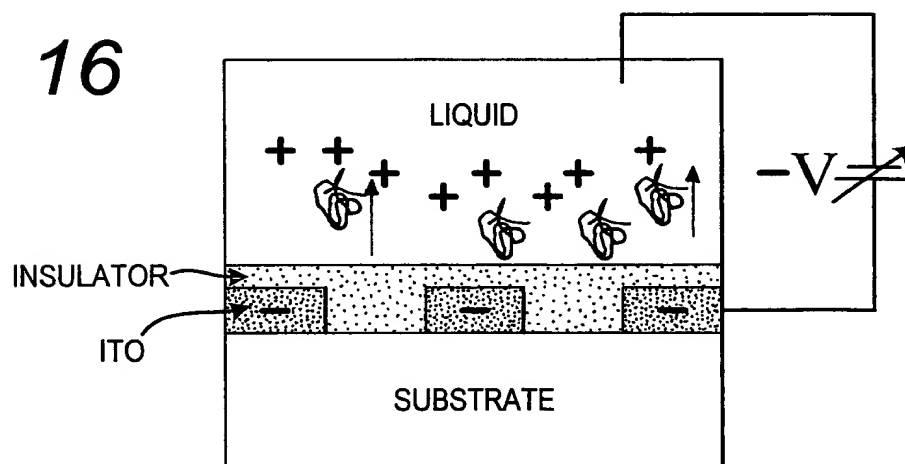


FIG. 17

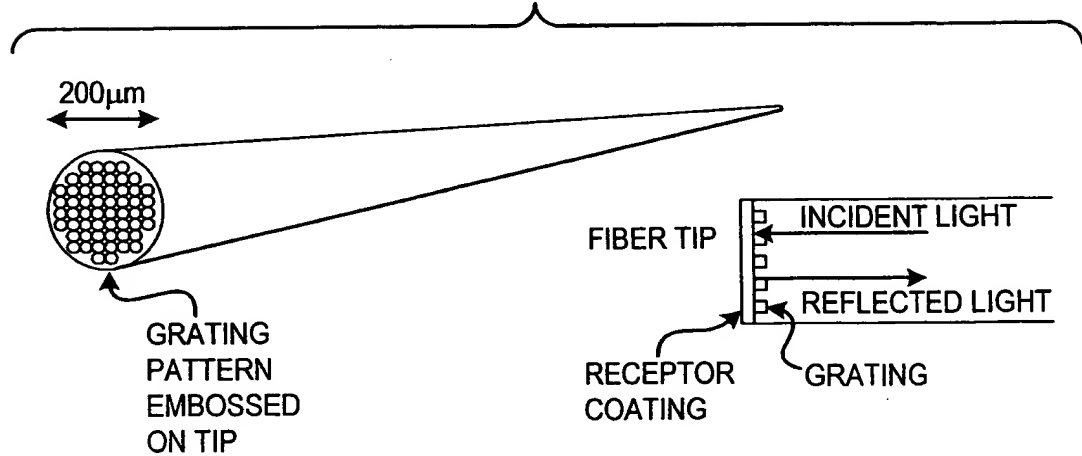


FIG. 18

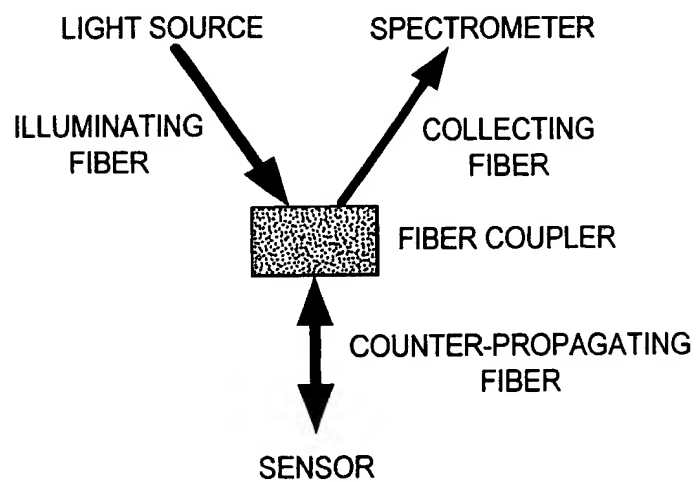


FIG. 19

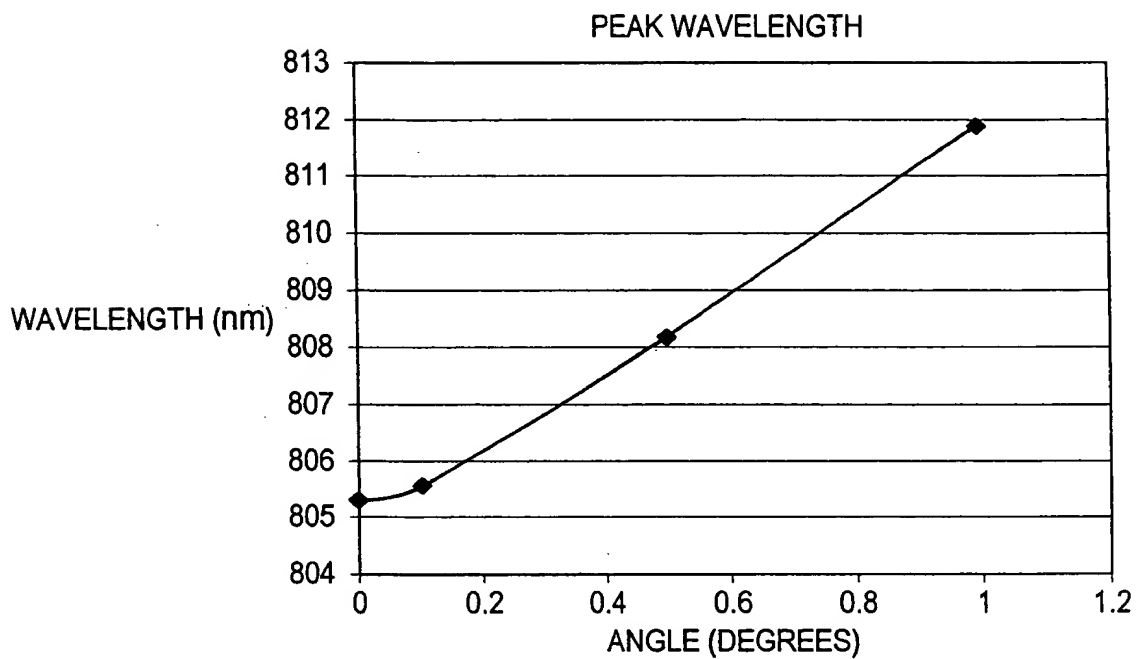


FIG. 20

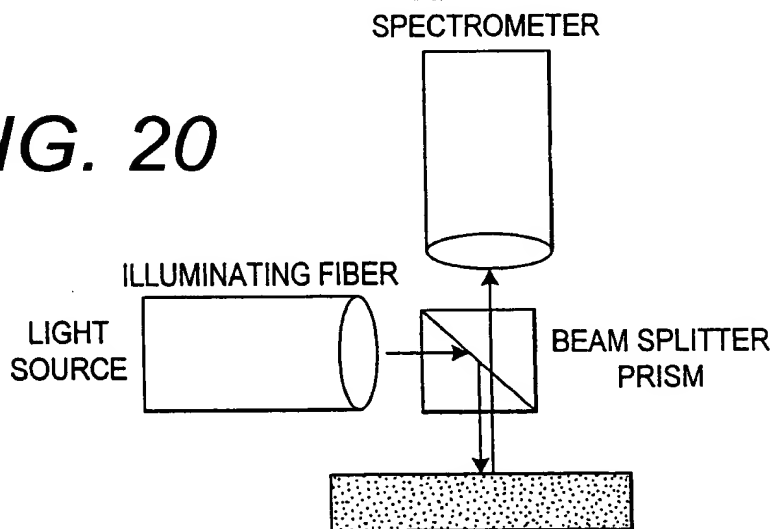


FIG. 22

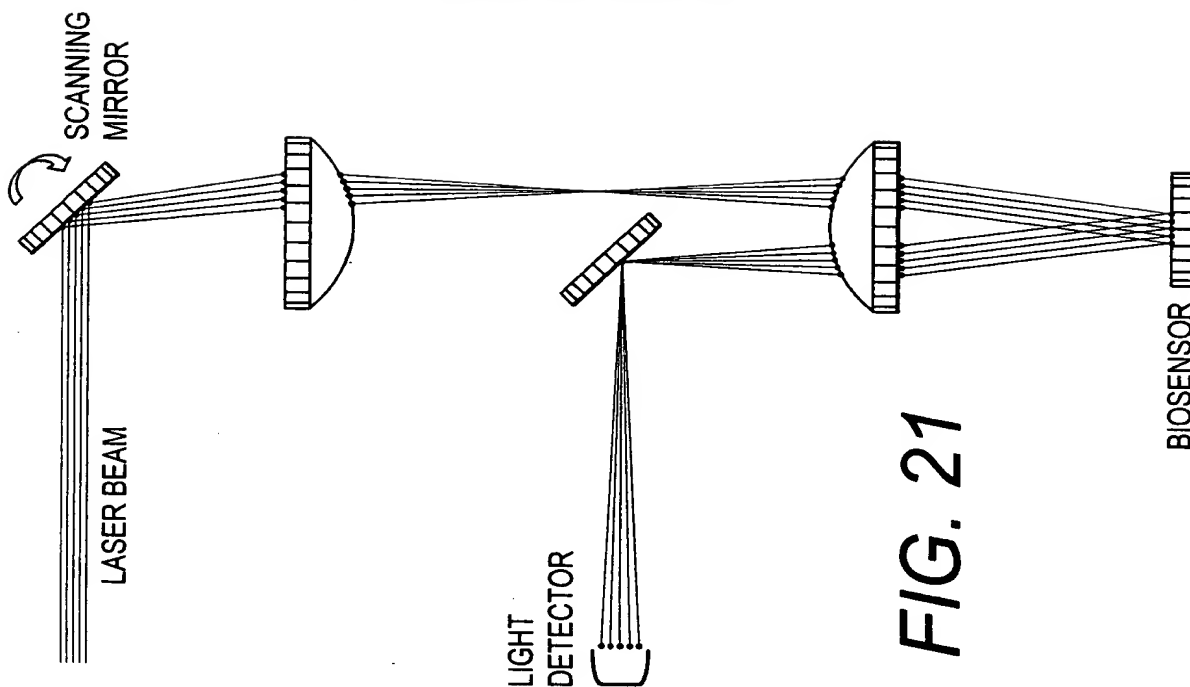
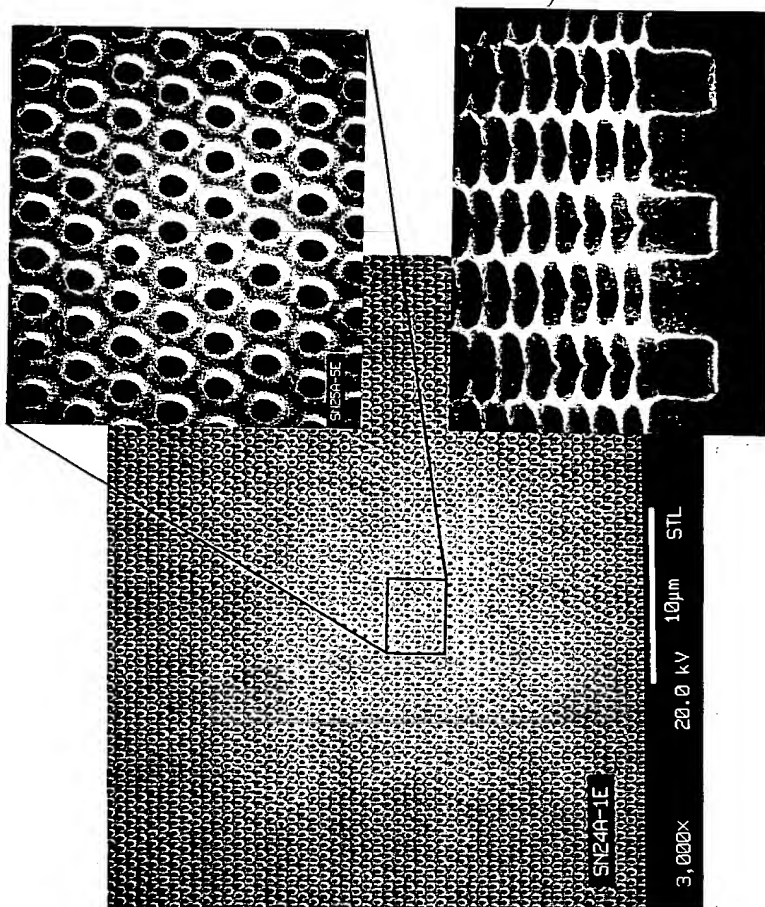


FIG. 21

FIG. 23

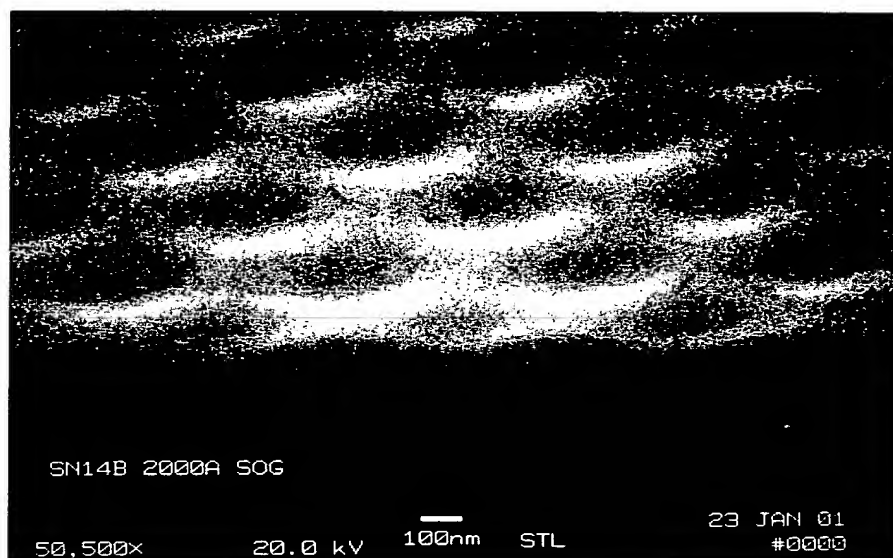


FIG. 24

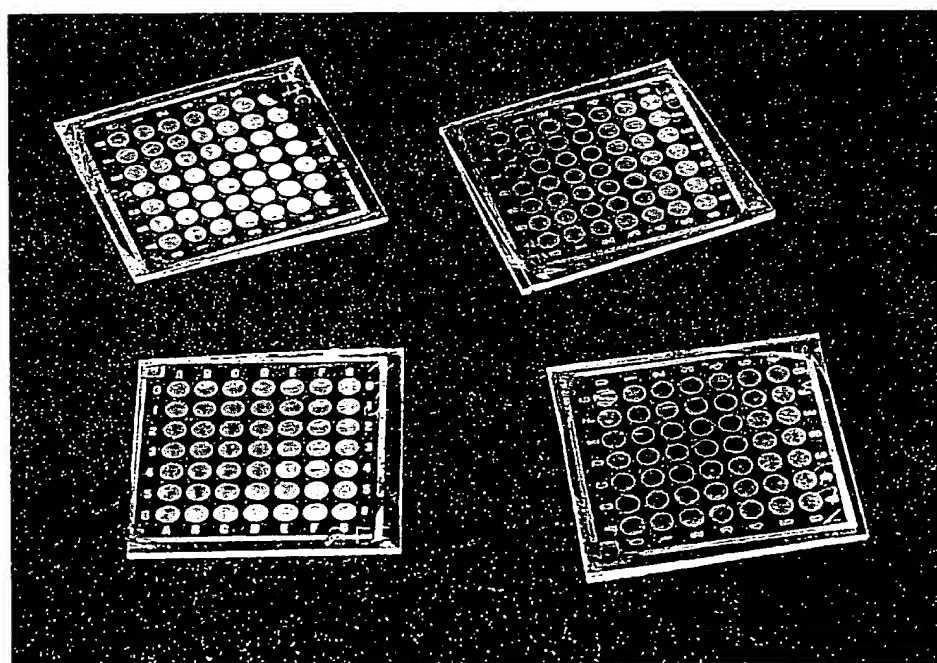


FIG. 25

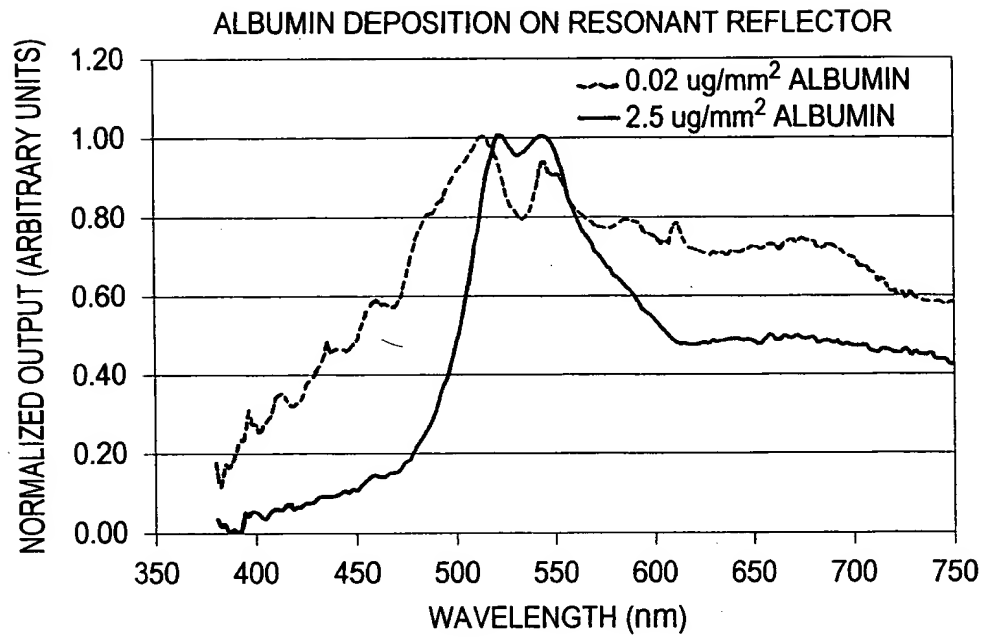


FIG. 26

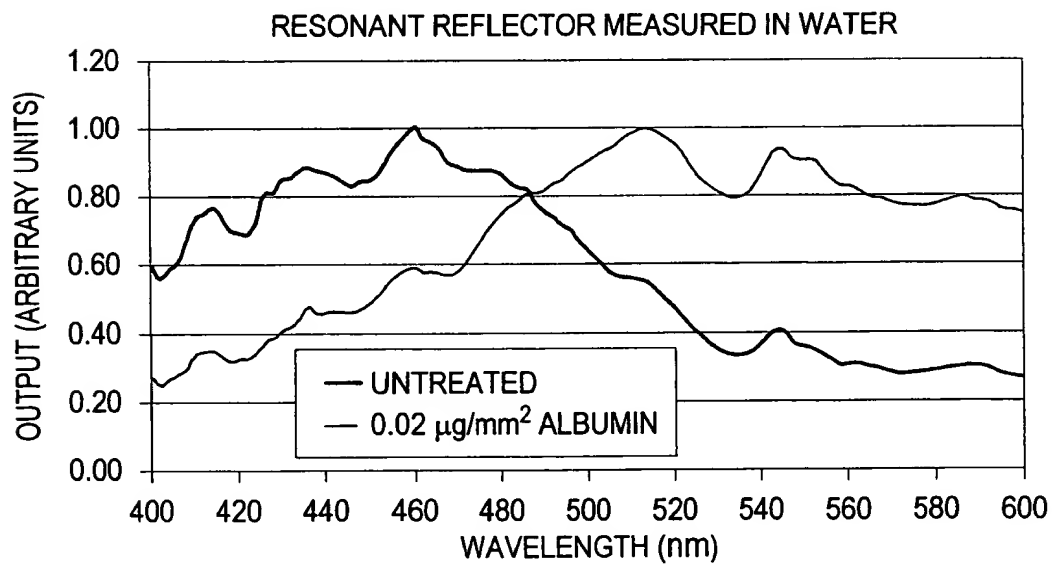


FIG. 27

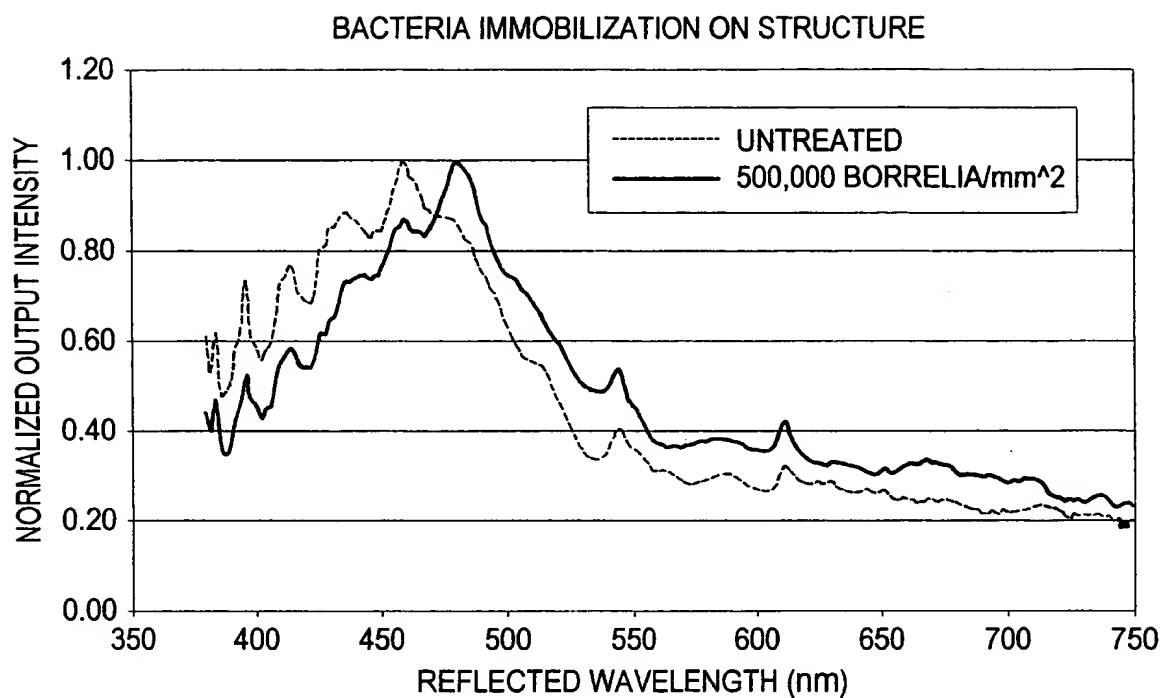


FIG. 28

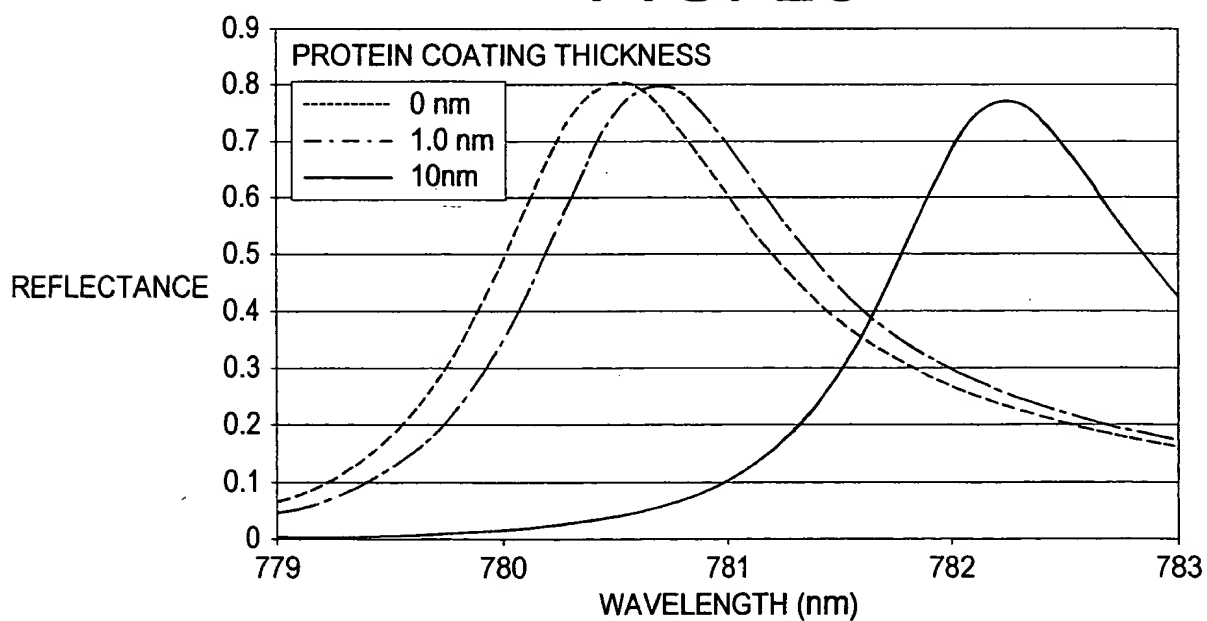


FIG. 29

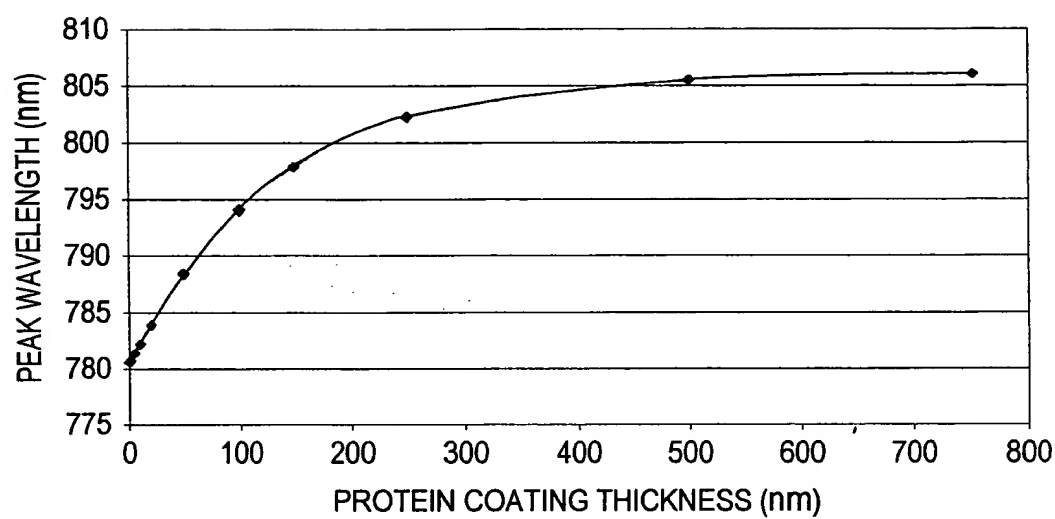


FIG. 30

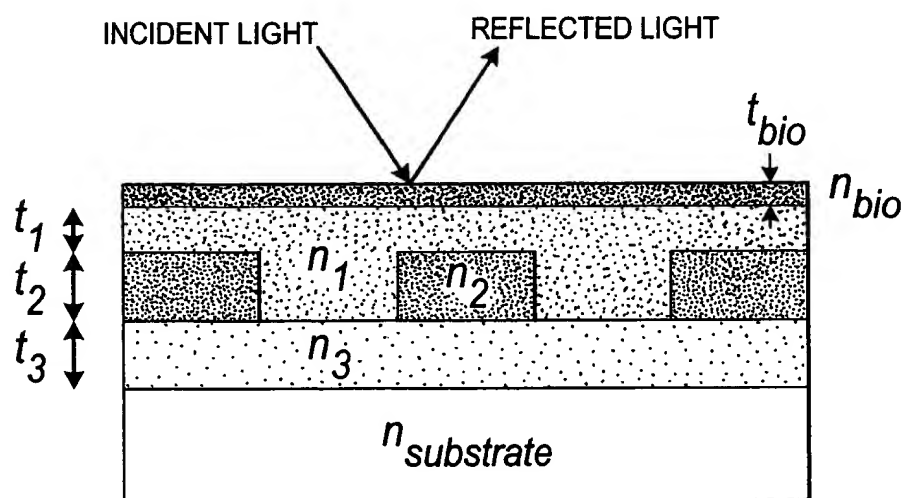


FIG. 31

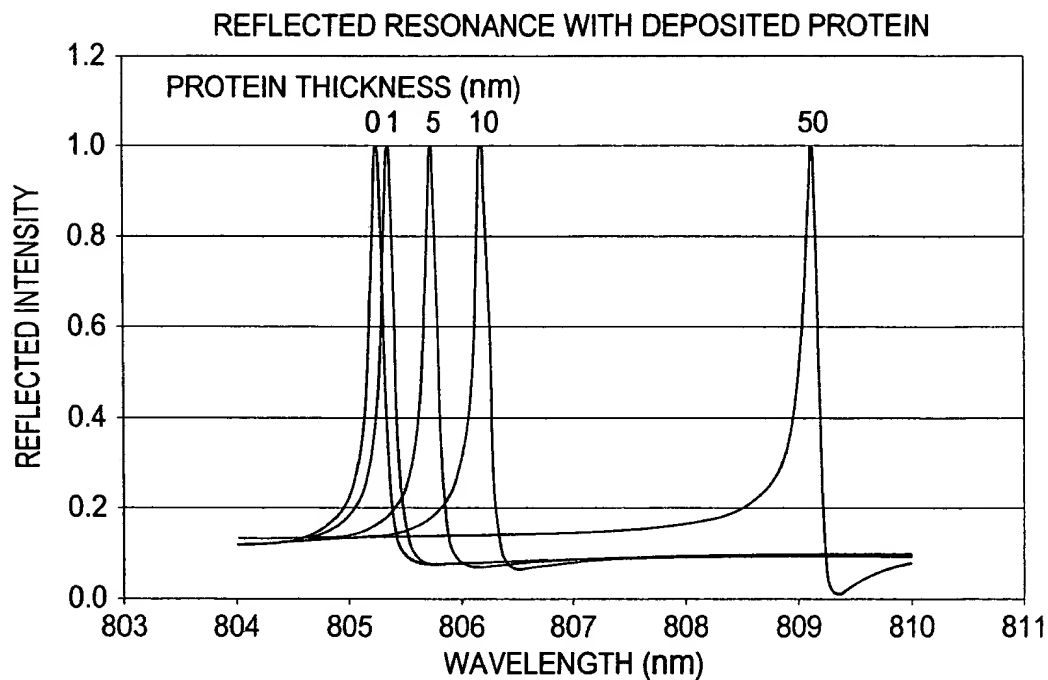


FIG. 32

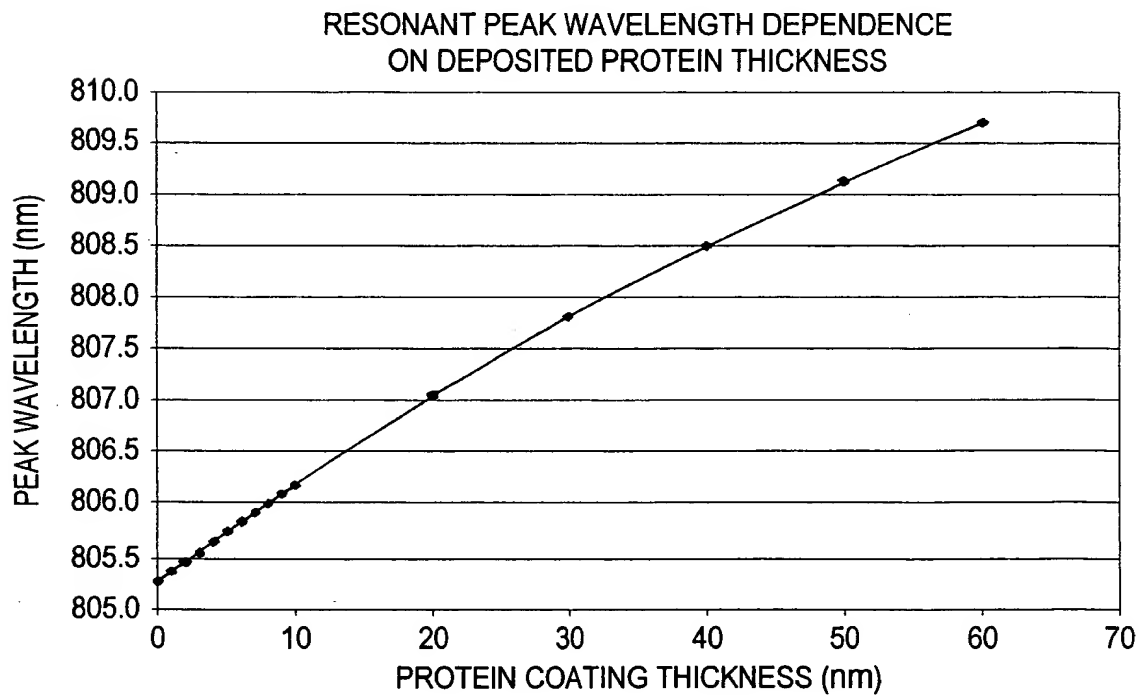


FIG. 33

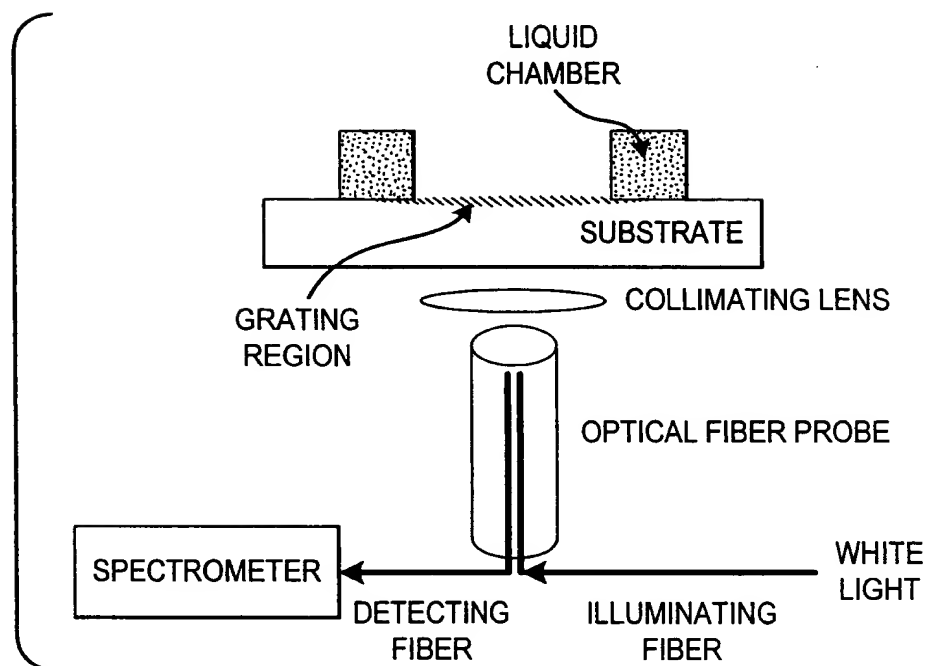


FIG. 34

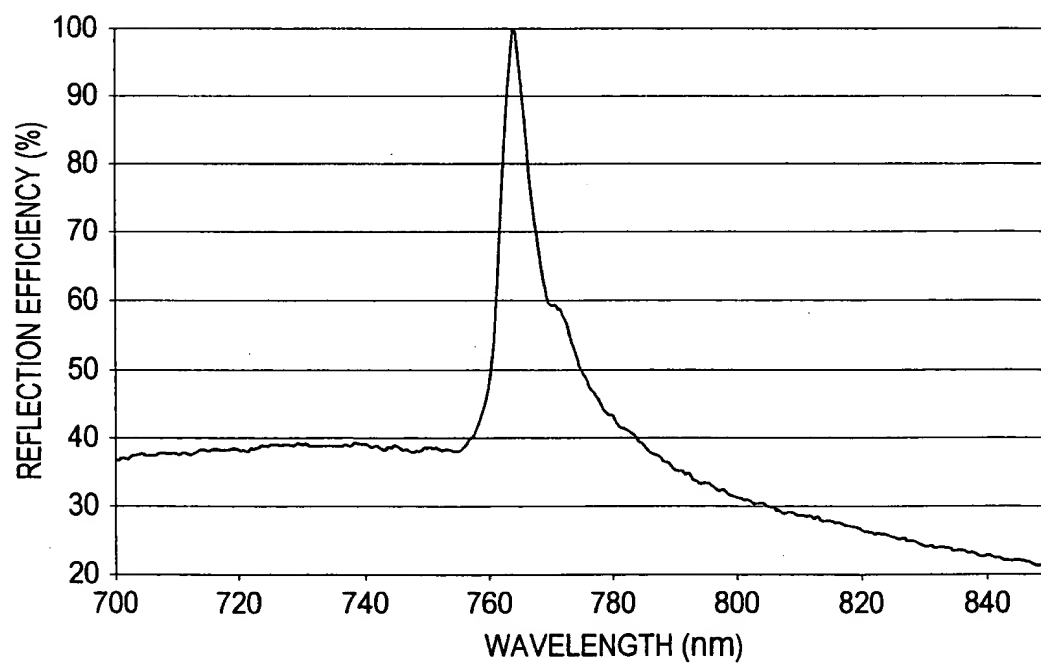


FIG. 35

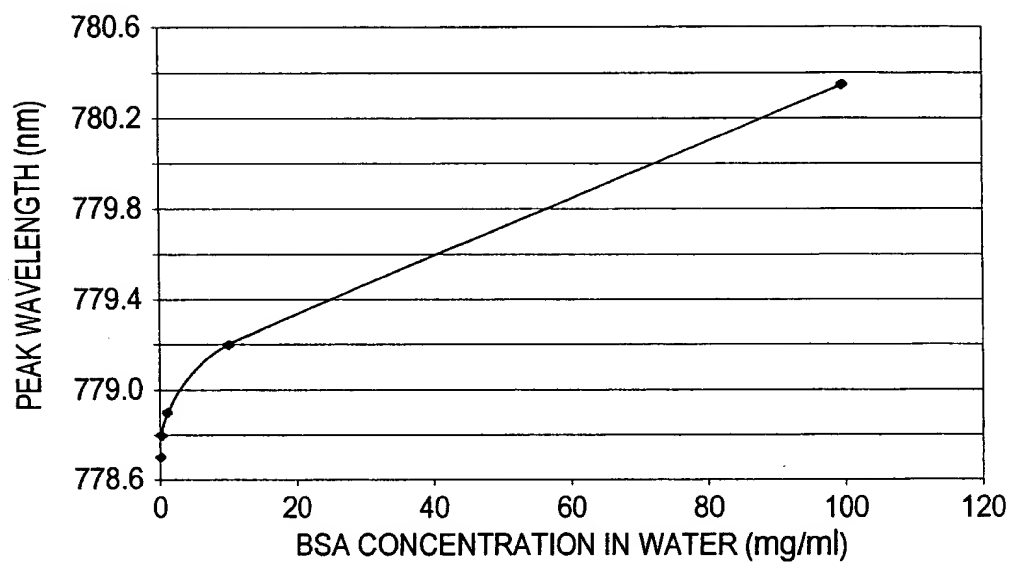


FIG. 36

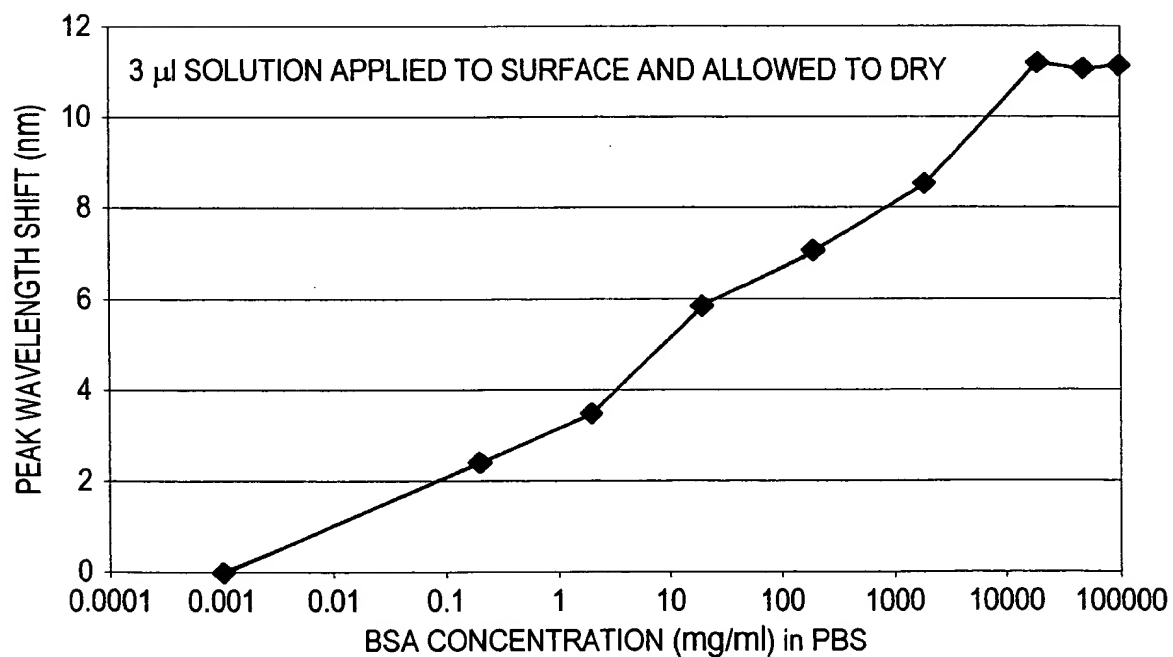


FIG. 37A

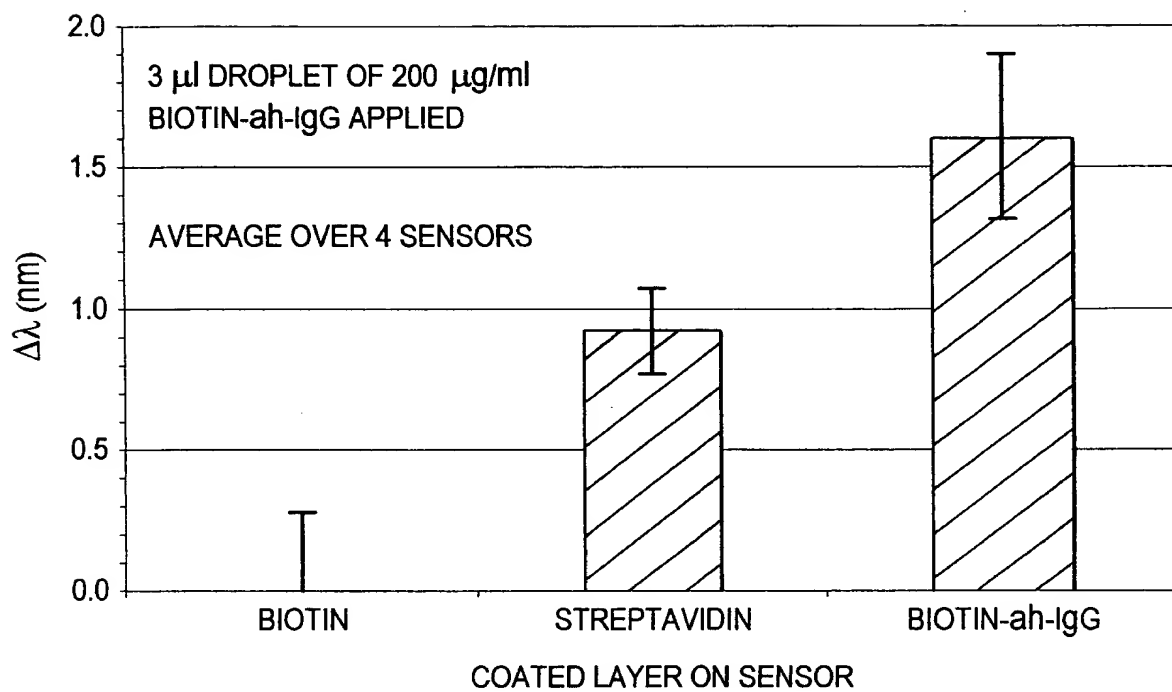


FIG. 37B

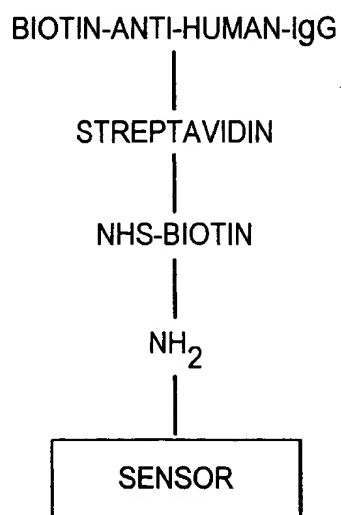


FIG. 38A

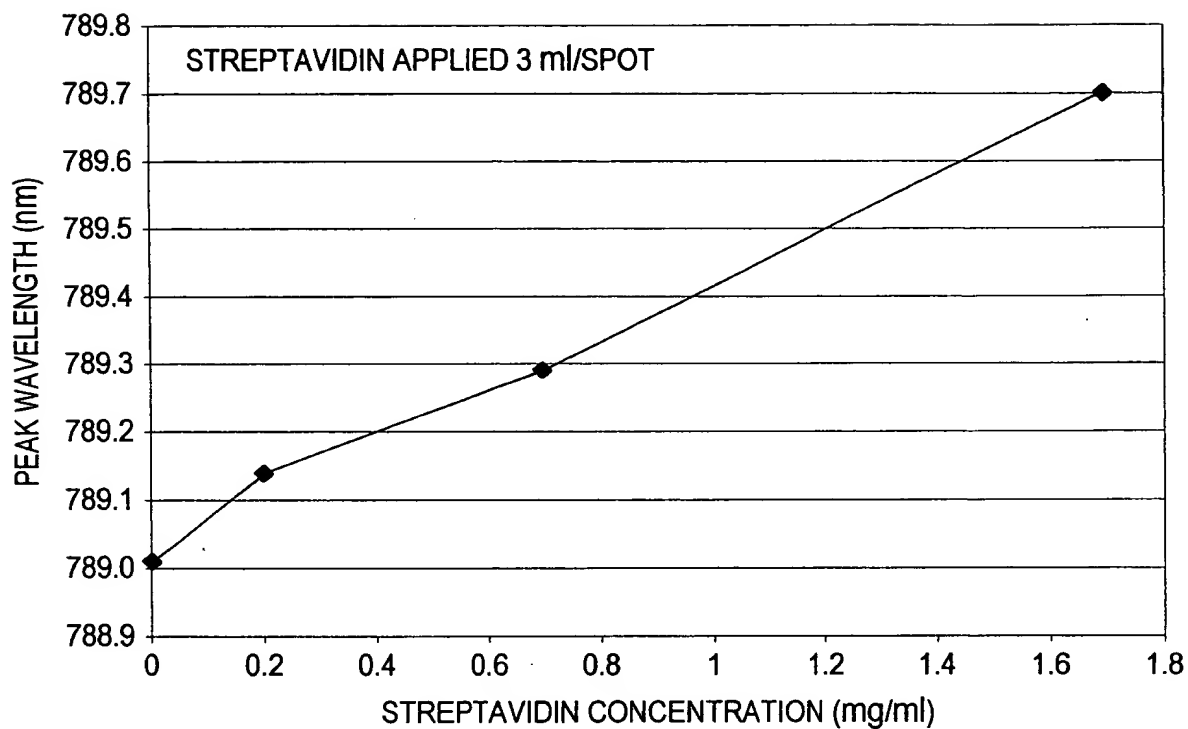


FIG. 38B

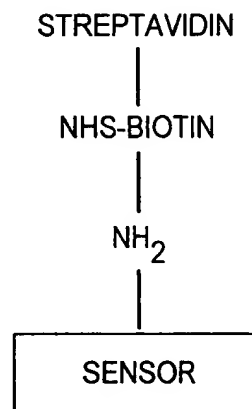


FIG. 39A

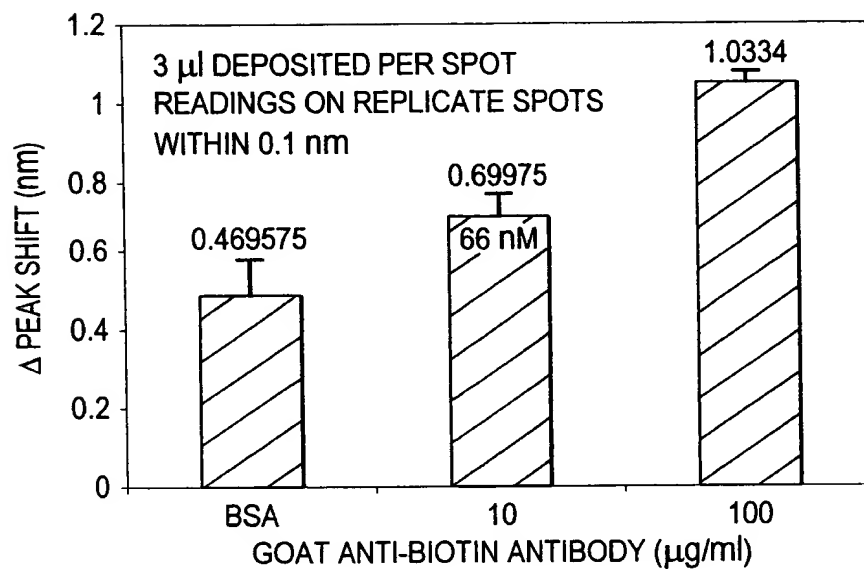


FIG. 39B

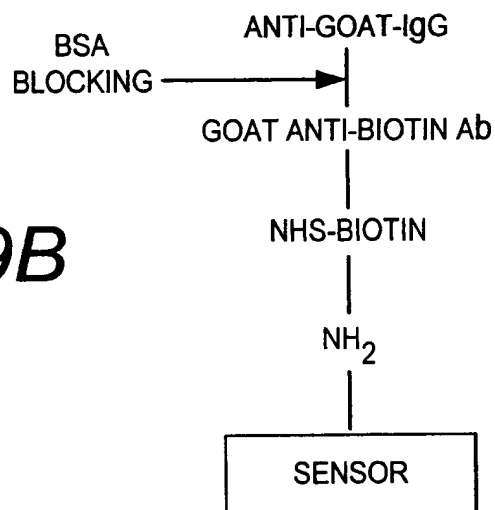


FIG. 40A

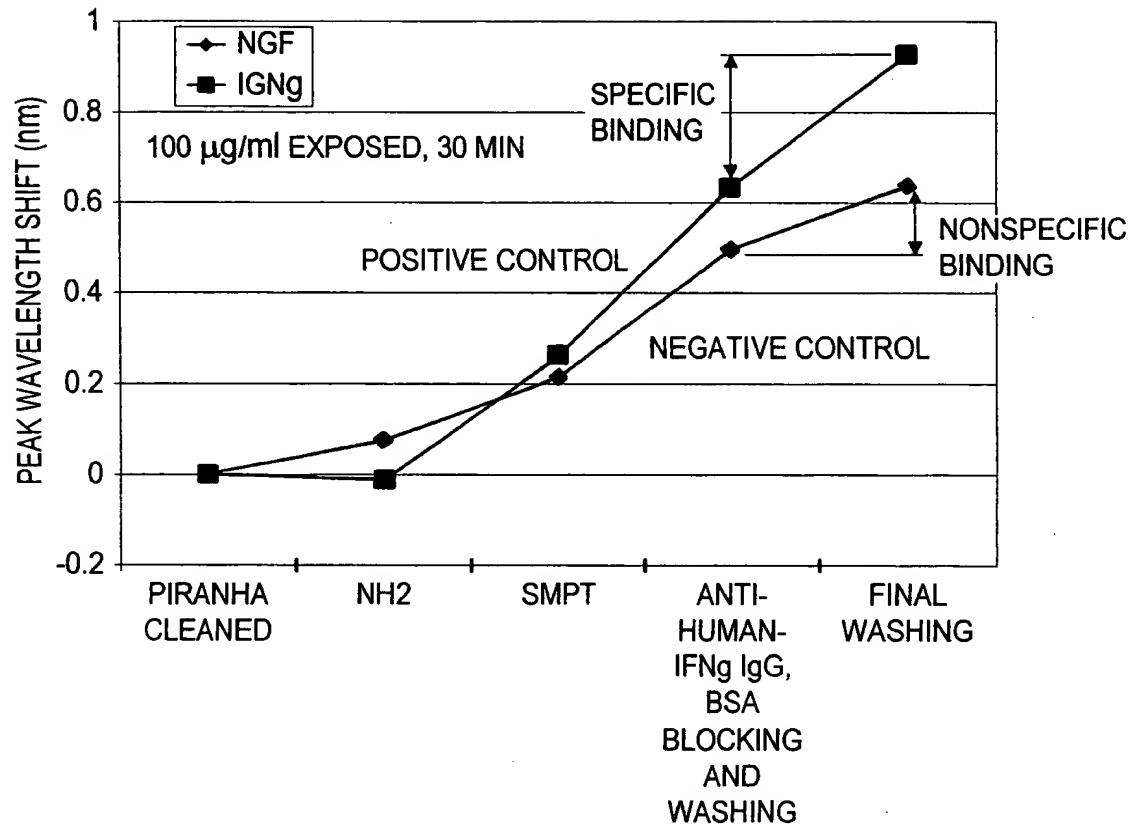


FIG. 40B

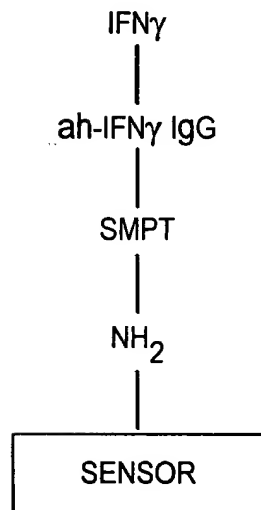


FIG. 41A

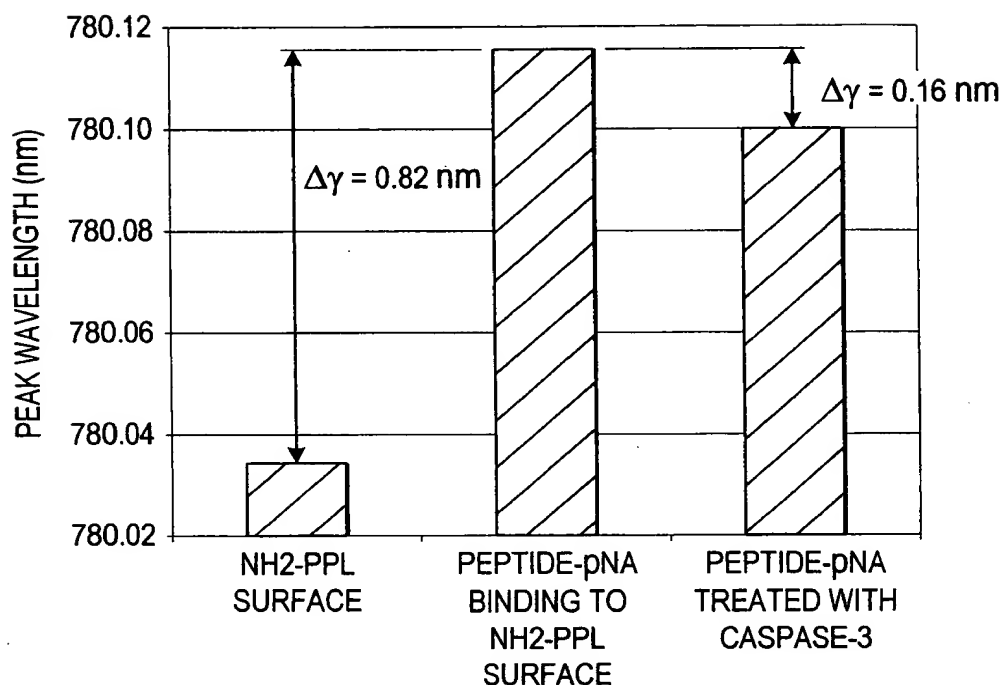


FIG. 41B

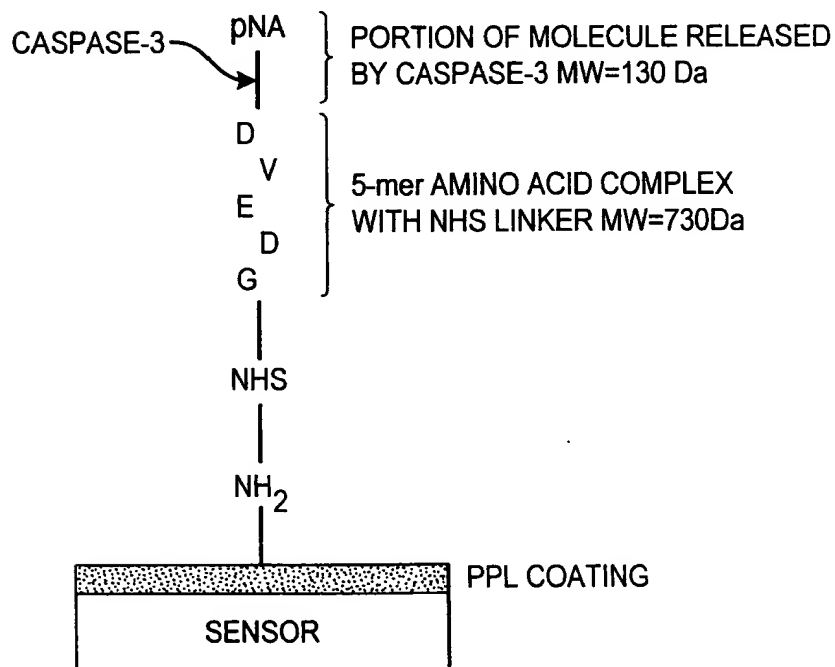


FIG. 42A

MEASURED SHIFTING OF THE RESONANT WAVELENGTH CAUSED BY THE BINDING OF VARIOUS BIOMOLECULAR LAYERS.

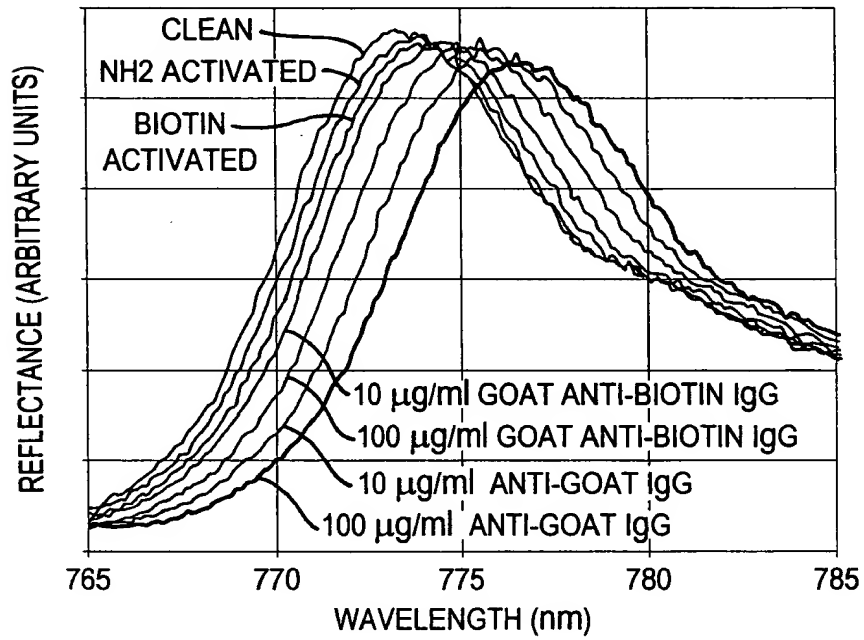


FIG. 42B

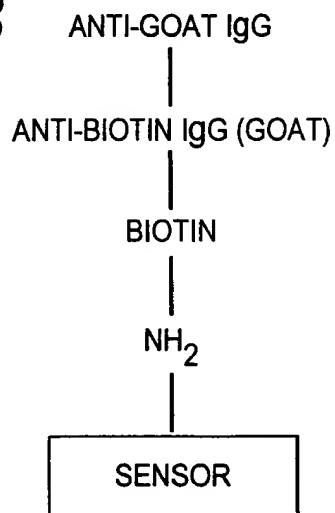


FIG. 43A

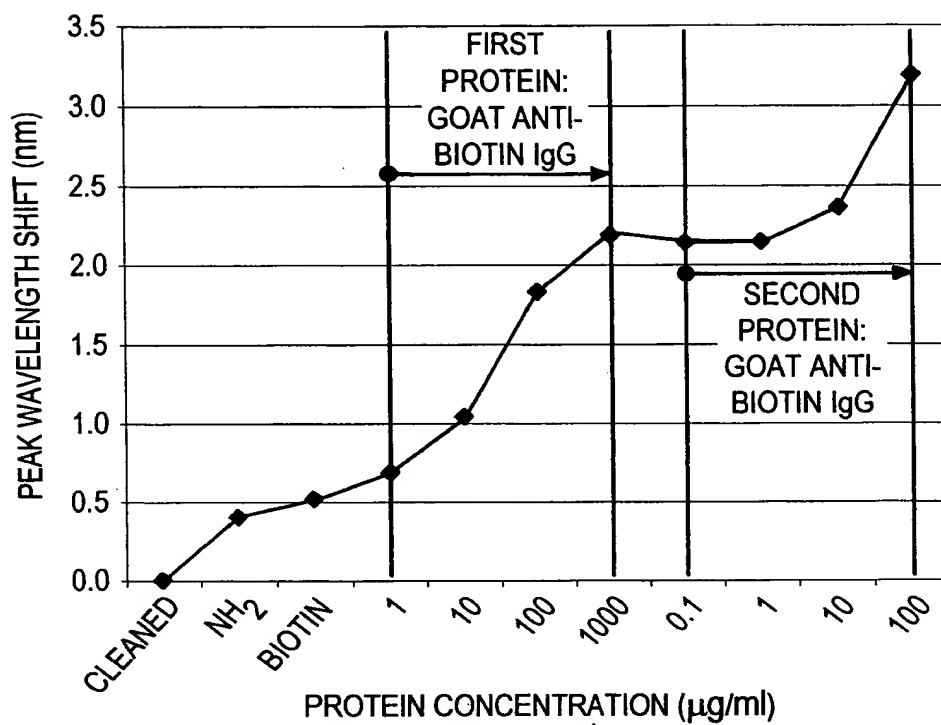


FIG. 43B

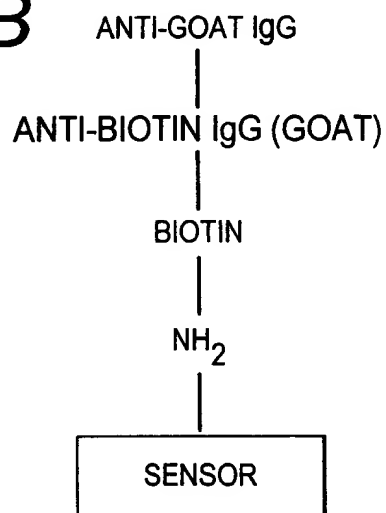


FIG. 44A

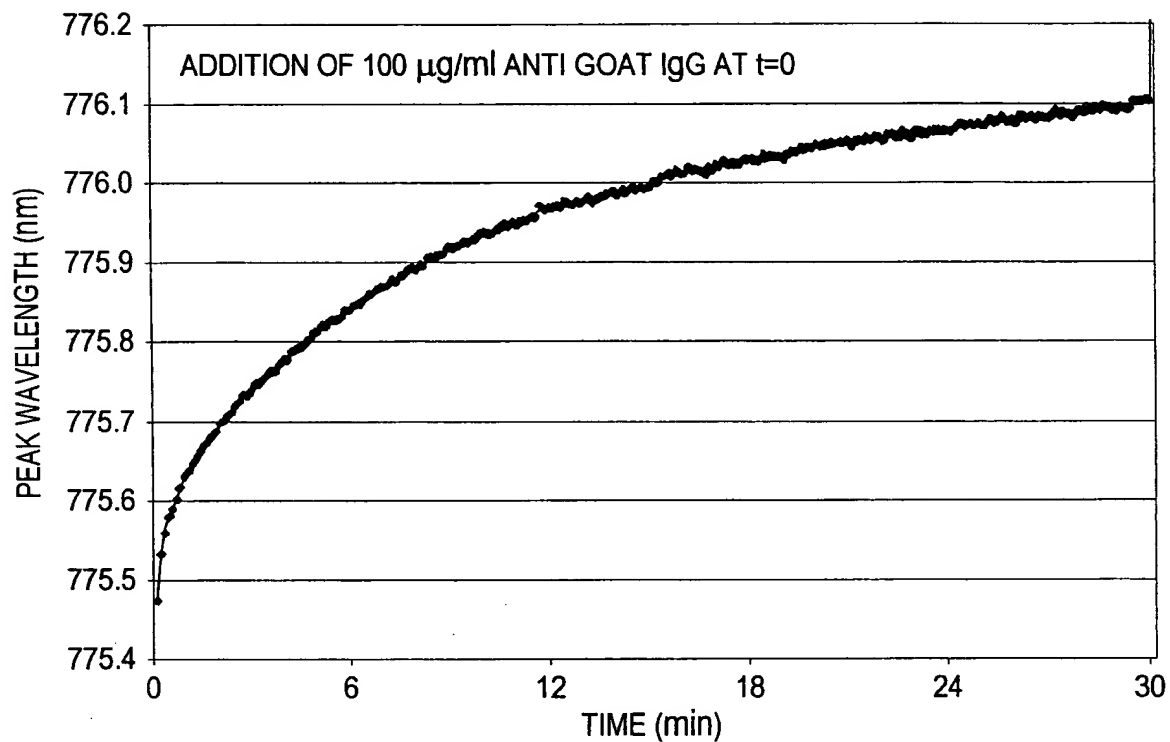


FIG. 44B

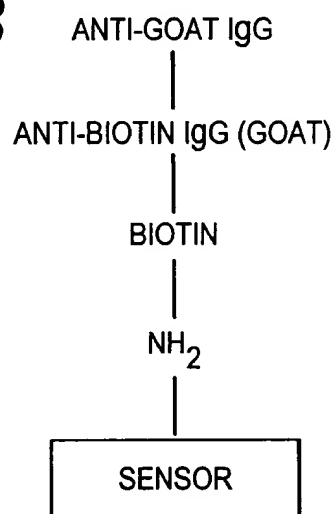


FIG. 45A

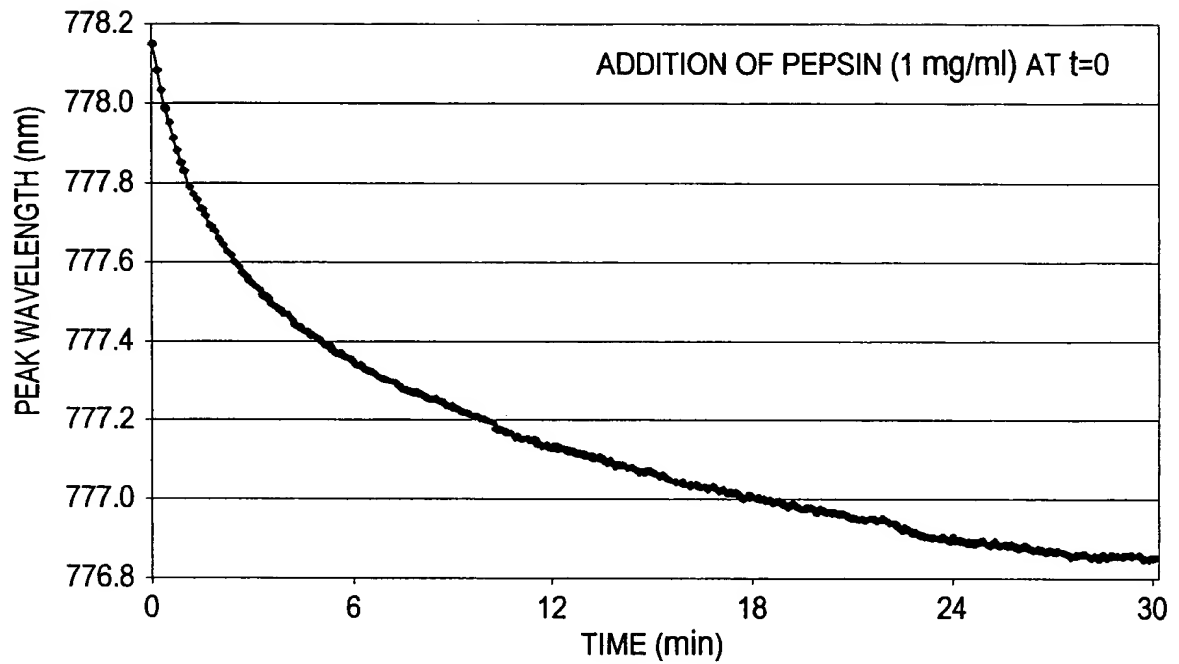


FIG. 45B

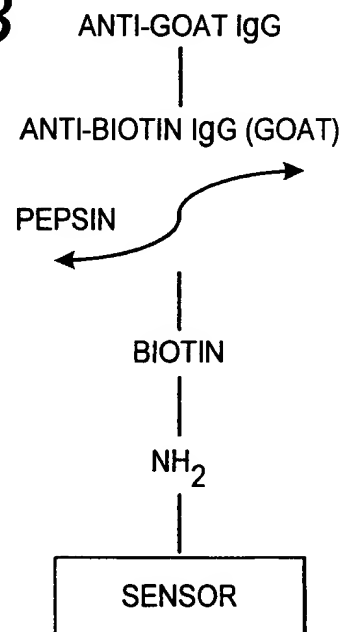


FIG. 46 CURVEFIT COMPARISONS

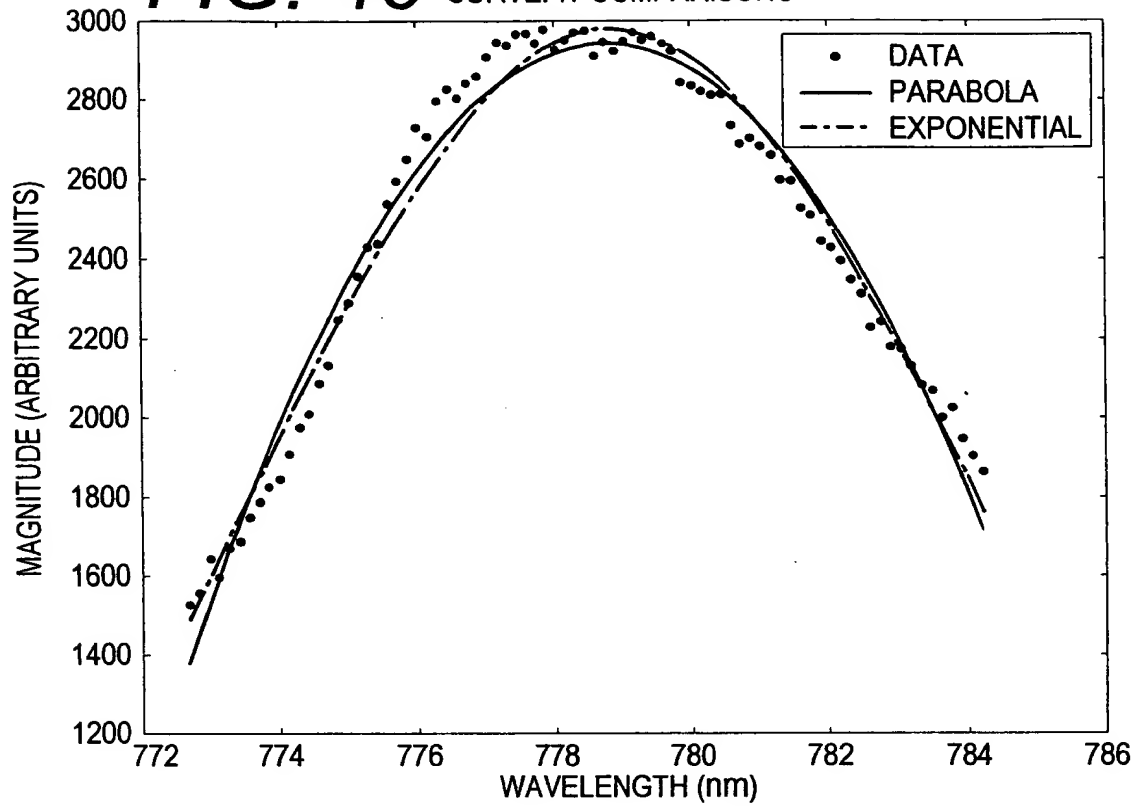


FIG. 47 PEAK LOCATIONS

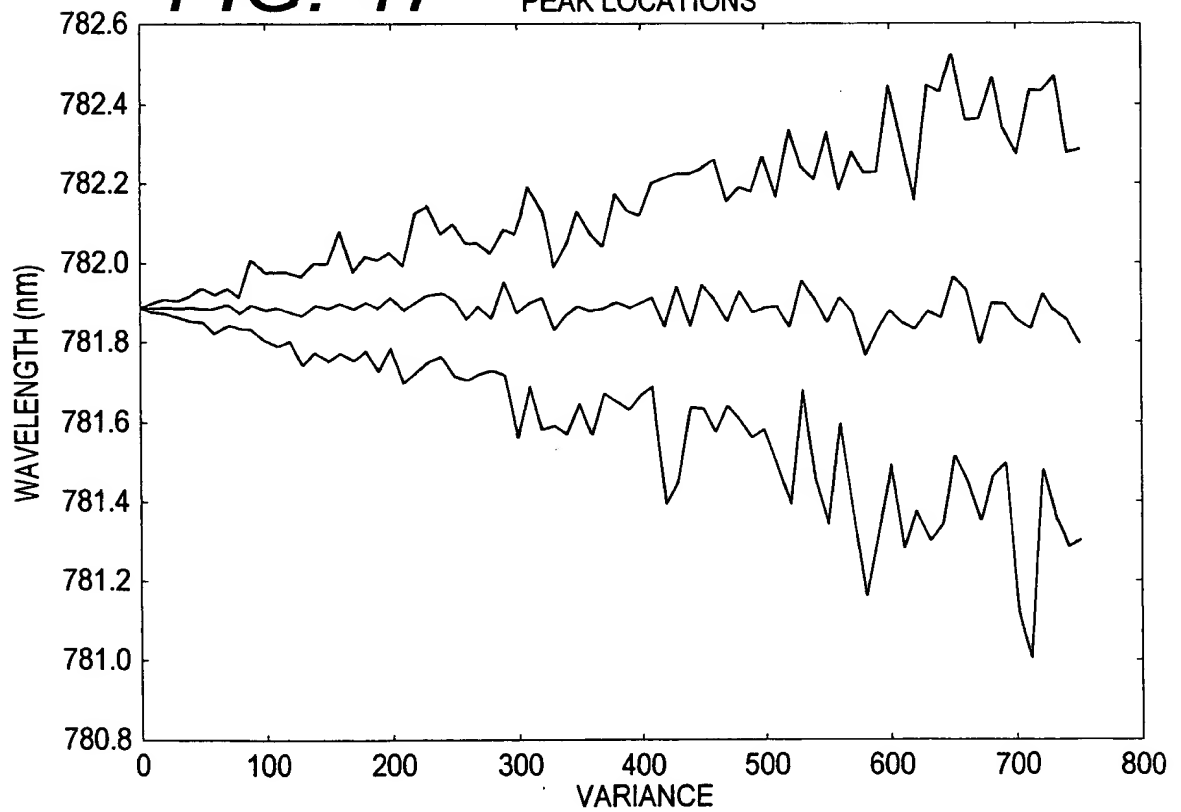
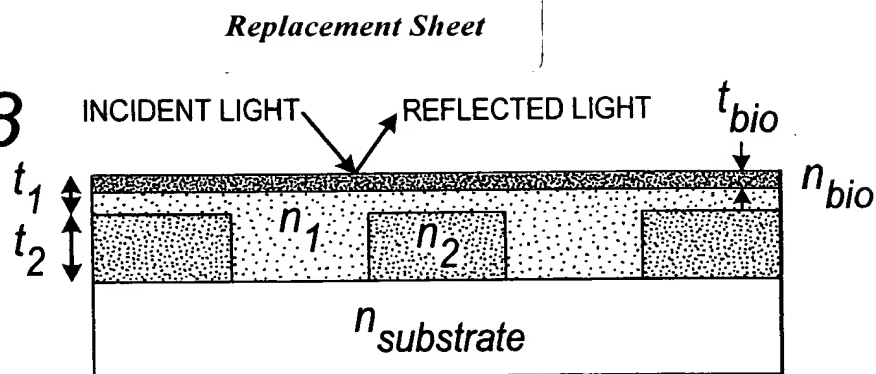


FIG. 48



MATERIAL 1 = ELECTRICAL INSULATOR (PHOTORESIST, EPOXY, GLASS)
 MATERIAL 2 = INDIUM TIN OXIDE CONDUCTOR
 SUBSTRATE = GLASS

FIG. 49

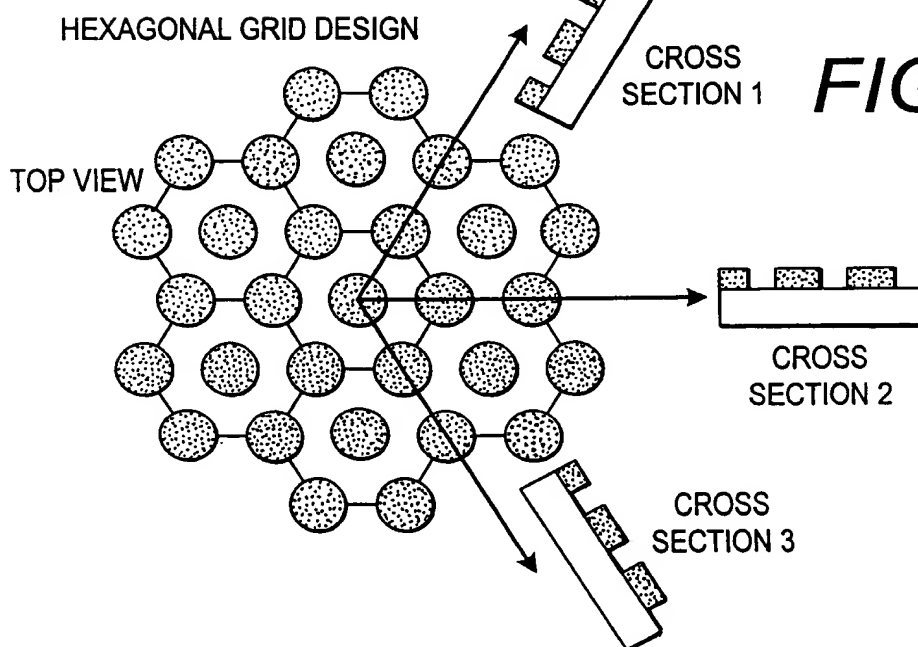
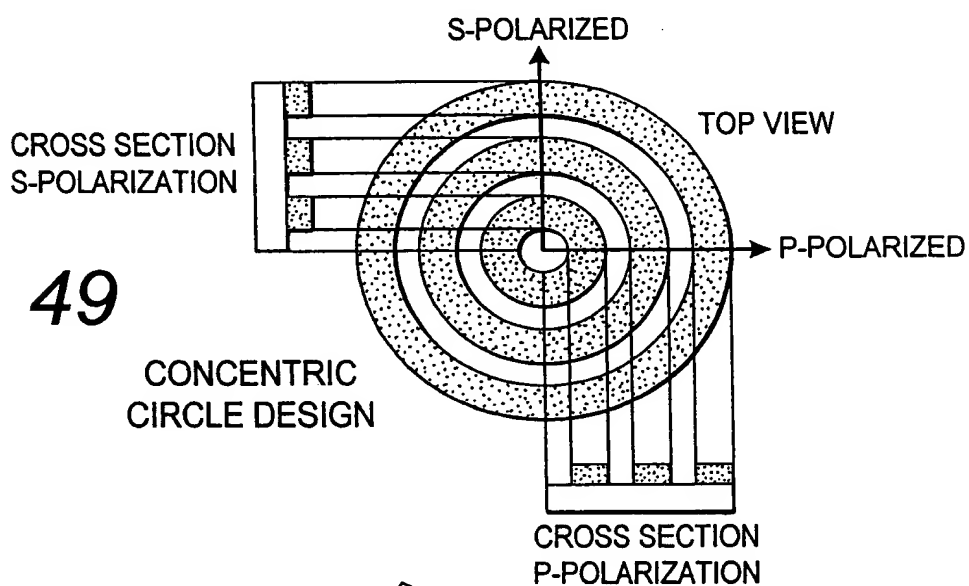


FIG. 50

FIG. 51

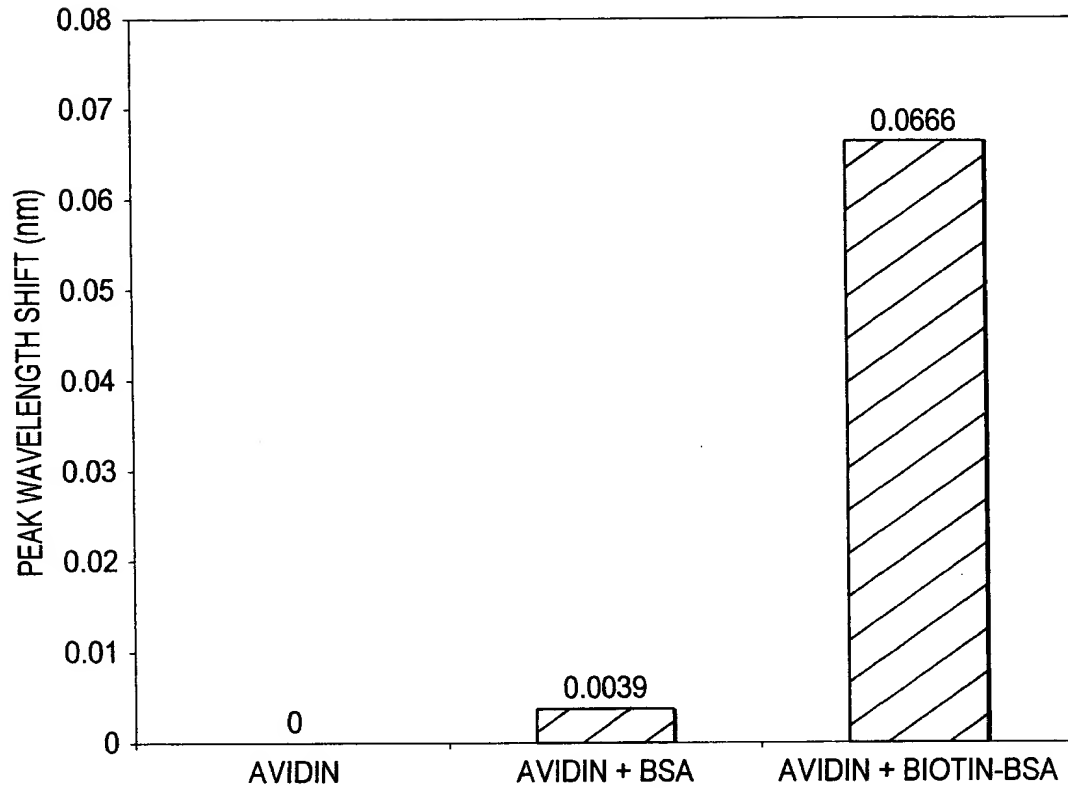


FIG. 52

